# KINETICS AND MECHANISM OF CATALYSED OXIDATION OF SOME ORGANIC COMPOUNDS

A THESIS SUBMITTED TO THE

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Under the supervision of DR. RAJ KISHOR SHUKLA



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the thesis entitled \* Rinetics and Machenism of Catalysed oxidation of Some organic compounds has been carried out by Sal Randoch Runar Delvedi under my supervision. We has fulfilled the requirements for the degree of Loctor of Philosophy in Chemistry of Bundelkhand University, Thensi, requiring the nature and prescribed period of investigational work. The work reported in this thesis embodies the work of the candidate himself.

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#### 1.1A DEPROCESSION

Chemical kinetics is a part of science of motion. It is fundamentally concerned with the details of the process who make a system gots converted from one state to another with the time required for transition. As in the case most of the branches of chemistry, reaction kinetics is an intimeted blond of theory and experiment. However, "Minetics" of the reaction has been the main tool for arriving et conclusions. The Subject of chemical kinetics is concouned with the detailed study of the retes of chemical reactions. The precise measurement of the retas of chamical processes and their variation with various parameters forms the experimental part of the subject. The interpretation of the results leads to an understanding of the complex reaction - mechanism. The elucidation of the section mechanisms, which papereds elmost exclusively through such experisontal work, is usually surplemented by other evidences, secause of this, chemical kinetics is considered as an important branch of chamistry and has acquired enormous literature 1-9 in the recent post.

has been studied in detail by several investigators. As a class of oxidents, N - halogen compounds have received special attention 10-13 since those compounds act as sources of halogennium dations, hypohalite species and mitrogen amions which act both as bases and nucleophiles, The oxidative halogenation by N - halo compounds such as N - bromestetamide (MBS)

offers a specific and septh method for frequenting high molecular weight populate and proteins and this selective charical method is the most useful method in peptide structure determination. Hence the exidative decampy—lation of  $\mathcal{L}$  - animoscies by N - helogeno compounds is an area of active experimentation. Therefore, in this chapter, the existing literature of the exidation of  $\mathcal{L}$  - emimoscies by various N - helogeno compounds is reviewed.

#### 1.18 : REACTIONS VITH N-BROWNS CENTRATIE

The exidation of  $\angle$  -eminoacide by NBS was reported by achorbony et al. in 1981. At pr 4.7 and at temperature of excut 30°C the exidation of most of  $\angle$  - eminoacide proceeds smoothly. Carbon dioxide, emenio and aldebydes related to the  $\angle$  - eminoacide so treated and containing one carbon atom less than the parent eminoacide, are the factor usually produced from the eminoacide by the eminoacide by the eminoacide by TBS. At pr 4.7 and 30°C the decemberylation except for the fact that emayoric action leads to the production of the epicocide by TBS resembles decemberylation except for the fact that emayoric action leads to the production of the epicocide by TBS resembles

A qualitative and quantitative study was made on the gases evolved in the decembery lation of endmostids and their derivatives by MBS. The only gases evolved by treatment of agreeus solution of enimostics with MBS at exhient temperatures were cashon dioxide and nitrogen. In addition, the aldebydes

and nitriles corresponding to the decembryleted emimoacids were formed. The formation of aldehyde was accompanied by the liberation of an equal amount of amounts which was subsequently oxidised to nitrogen by NRS. The kinetics of oxidation of  $\angle$  - aminoacids by NRS were investigated only in early eightles even though the exidation measures themselves were reported quite earlier.

the kinetics of exidation of - emissecids by NNS have been reported by NNS hand 18,19 and Shanjava 11 12 in adetic acid - water mixture. The buc groups of workers have reported different mechanism and different emission products though the kinetics observed by then are similar. Sharjave proposed the abstraction of hydrogen from the neutral aminoscid by NNS in the rate determining step to give aldehyde as the final product.

corresponding nitriles through the interaction of MBS with  $\Delta$  - rains and switter ion as follows:

alemine and value presented by NBS have been studied extensively 21 as a function of pH and also in adid medium 22. At pH 3.7 slycine obeys Michaelis Menten type of kinetic behaviour but shows substrate inhibition at pH 5.0. Both alamine and value display more order dependence on substrate contentration at pH 3.7, but exhibit Michaelis - Menten behaviour at pH 5.0. Solvent isotope effect and proton inventory technique were also studied. A mechanism involving the formation of acylhypobromite of plycine, which on slow decomposition gives an imize and subsquent rapid conversion of indue to products is proposed. Both alamine and value undergo exidation by a mechanism involving the slow abstraction of the hydrogen as bydride ion from the substrates as well as its acylhypohromius to give the imine.

The kinetics of exidetion of  $\angle$  - eminescide by N-Chin psychiniside (NGS), the chinring enalogue of NBS, have been studied in equeous alkaline medium<sup>23</sup> emails buffered medium<sup>24</sup> in the pH range 3.5 to 6.0. The observed

results show that in alkaline medium the mechanism could be written as a

In buffered medium, the mechanism differs from the one in alkelies medium in the respect that the first step is the equilibrium between  $\angle$  - aminoacyl hypothloxite and aminoacid multter ion as

$$> n - cz + R - cH (mH2) COO  $\rightleftharpoons$   $R - cH (mH2) COOC2  $\Rightarrow$  mH$$$

The  $\mathcal{L}$  - cmino ceyl hypochlosite then decomposes in the sate determining step to give aldebyde and nitrile as the parameter. Formulaebyde catalyses the reaction at pri = 4.0 and this was explained by the formation of schiff's base between  $\mathcal{L}$  - animoscid and to smalldabyde.

#### 1.1C REATTIONS MAIN N-HALO D-TOLURNE SELEKEMANDE

The earliest definite work on the exidetion of amino acid with N-chloro p-toluene sulphonemide was reported by Dakin 1916 - 1917. Defin captoyed N-chloro p-toluene sulphonemide (generally known as chloremine - T or CAT) as the exidising eyent for a veriety of aminoacids and reported that one mole of CAT per mole of aminoacid will cause the formation of aldebydes, carbondoxide and amonis but two moles of this spagent will cause the production of nitriles.

by chloramine-T is both saidid and alkaline media has been studied extensively \$26-50. Depending upon the pH of the medium CAT furnishes different types of rescrive species in solution. S - chlore p-toluene sulphaneadde (sonochloramine-T, R S (CL), were R = pCH3 ( CL), SU2), dichloramine-T funcia), NOCL and possibly NgO CL are the predominent species in axid solution and RNCL and OCL ions are formed in alkanina medium. The exidation process of K - aminocrids in axid media has been reported to proceed via, two paths, one involving the direct interaction of RNSCL with the neutral aminocrid in a slow step leading to the formation of N-chlore aminocrid which subsquently interacts with meether molecule of RNSCL in a fast step to give N,

yield the product nitrile and the other path involving the interaction of Ci or H<sub>2</sub>O Ci, produced from the disproportionation of NOHCl in the presence or absence of Ci ion. With the substrate to give the product. In alkaline medium, the mechanism involving the interaction of R NOCL, HOCL, RECL and OCL with the substrate is proposed. The reaction scheme can be summarised as shown below: Acid Medium:

Cla + R CH (HH2) COOH PORT R CH (HKCL) COOH (S)

8 + Cla manifestary PENCHER

H2O CL + R CH (HR2) COOH - R CH (HRCL) COOH

5° + N<sub>2</sub>O CQ \* Papiducts

Alkaline Medium :

SHINGS + R' CH (SH<sub>2</sub>) COO  $\xrightarrow{E_{a}G_{a}B_{a}}$  R' CH (SHCS) COO (6')

5 \* \* R MACL POPE PROCNETS

A GI (6H2) GOO" + OCL" - SALAP N' GH (HICL) GOO" (6")

S" + OCI PRODUCTO

the carboryleto group of the mainsecid is elso proposed 1.46
from the kinetic results in edicic medium. Kinetics of oridation of  $\angle$  - animoscids by W-brown p-valuese sulphonomide 1.56
(mat), N- Chloro because sulphonomide (CAR) and N-brombensons sulphonomide (CAR) where also extensively studied in both edicic and alkaline media. The kinetics and maction mechanisms of the oxidents are similar to that of CAR.

It opposes from the survey of literature that Nebromosuccinimide is a notine oxident in edidic and alkaline media, but the literature on its caldative canacity in the prosence of homogeneous catalyst iddica (III) chloride in ecidic or alkaline media is not known. Iridiam (III) chloride al wouth has been earlier ettempted to obtain its catalytic potential in in N-bromoscetamide but in hydrochloric acid catalytic potential of iridica (III) duodide in madex system involving N-benepaccinimide as oxident and amino acids es monacing agents. Hence in the present work an attempt has been made to investigate the kinetics of inidium (III) chloride catalysed oxidation of glycing, alaning and valine ecotate as broade ion scavenger. The kinetic date will be collected in the presence of potentian chloride. Since Variation of ionic Stronger of the medium plays on important mie in deciding the nature of reactive species of rate determining step, hence in the beginning it was attempted to and whether rescribes were influenced by change in ionic strongth of the modium. It was observed that ionic strongth did not influence the same of the maction. Hence all reactions were studied without maintaining ionic stumpath of the solius constant.

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CHAPARA 11

#### 2.1 : CHEMICALS USED AND BUILDARYTION OF THEIR SOLUTIONS

- (n) The solutions of glycine, alenine and valine Lobe chemic) were prepared by dissolving their desired and weighed samples in doubly distilled water. Anino acids used here were samples of highest purity evailable and hence they were used as such.
- prepared by dissolving its weighed exceptablised sample in doubly distilled water. Its solution was standardised by estimating its efficient boomine by inchestric estimations.
- (c) The solution of inidica (iii) chloside (Johnson and Matthey) was prepared from its 1 cm sample by dissolving it in 200 ml of 0.1% HCl and then it was diluted to one little for stock solution. Its strangth was calculated and strength of HCl was also calculated in the stock solution.
- appointing its weighed cample in tripled distilled webst
- (a) Nydrochloric acid Solution propared was Standardised with standardised Solution of Society hydrochio which itself was Standardised by Standard Solution of Oxalic acid (801).

- (a) Solution of sodium thiosulphate (also known as hype)
  was prepared by dissolving the weighed amount of its
  sample (E.Morck) in doubly distilled water. The
  prepared solution was further standardised with standard
  solution of copper sulphate indepentically.
- (a) The solution of putessims chloride (SDM) was prepared by directly weighed secole in distilled water.
- (i) Solution of succinimide was propared by dissolving its weighed sample (6. Merck) in doubly distilled water.
- t) Solution of sodium perchlorate was prepared by dissolving to 5. Merck (Gerseny) sample in desired quantity in known volume of distilled ester.
- (r) 10% solution of potession indice was freshly proposed each day.
- (r) is about solution we perpared.

#### 2.2 MEDITO OF INVESTIGATION

The kinetic investigations were carried out by following the procedure given here. Requisite volume of Standard solution of reducing enino acids used here, hydrochloric acid, memoric acetato, iridium (III) chloride, potassium chloride and other respents, if any. were taken in a reaction wassol which was kept in an electrically operated the masterid water bath set at douted temperature. The required volume of N-bromosuccinimide standard solution was also taken in another vessel which was also placed in the same the mostat for themsel equilibrium. When solutions of both the vessels has attained the desired temperature, the solutions of both the vessels were mixed vigorously and the stop websh was started at the time of editing. As alignet of maction minture was taken out and then was noted as meno time and this metter of maction abstace was sectioated for 1985 indepotrically. The progress of the reaction was monitored by determining the runnings Hill at different times of incerveds.

The velocity constant of the reaction was calculated with the help of reactings noted at different time of intervals. A plot of (a - x) and not "time" was plotted for different concentrations of MBS (where 'a-x' is the

concentrations of PDS at different times). when the seaction has proceeded hardly 10% a tengent at point on the durve is drawn. The point corresponds to 10 simutes. The slope of the tengent gave the value of ( ). The concentration at which ( ) is determined has been designated as [NBS]. The order of the reaction with respect to NBS is calculated with the help of ( ) values obtained at different concentrations of NBS. Now when the order of the reaction with respect to NBS is determined and ascertained, the velocity constant of the determined and ascertained, the velocity constant of the determined of other reactant with respect to which order of the seaction is to be determined. This way the order of the seaction with respect to each reactant is ascertained.

## 2.3 · Company of the company of the

various set of experiments were carried out with different [ms]. [emino acid] ratios. Satisation of emacining his showed that one make of make was consumed to origine one make of each of emino acids used here and secondingly following statishmentals one (1) is formulated where a standa for the case of the

..... (3)

The corresponding albehydes some identified as end products in oxidation of each emino acids.

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to the an entire content of the state of the

CONTRACTOR OF THE PROPERTY OF

This chapter includes the study of kinetics of enddation of inidian (III) chloride catalysed exidation of some amino acids such as alycine, elamine and valine by N - broadseccinimate in the presence of hydrochloric acid. Proliminary investigations indicated that with the progress of the reaction a pale yellow delout developed in the reaction mixture after 10 - 15% of the reaction has proceeded. as a result of this development it was also observed that reaction which was proceeding slowing, became faster. This was ascribed to appearance of Ez, in the reaction as a result of interaction between N-benapsuccinizate and & (produced in the reaction). This produced braning sets parallel oiddetion process and thus complicates the study of the title reaction. Proliminary studies else showed negligible effect of variation of lonic strangth of the meditum on the monotion zero. Hence all reactions have been corried out without becoming ionic attempts of the medium Constitute.

In order to solve the problem of qualital exidetion of control acids by he, expendent was carried out in the presence of measure agreets which acted as 3, scavenges to the reaction sixture. It was observed that appearance

of yellow colour was stopped. Hence all experiments were carried out in the presence of memberic acetata whose presence in the reaction pure N-bromosuccinimide exidation of amino acids without any complications.

In order to determine the order of the meetion with respect to N-orman Succiniate (NBS), several experiments containing different concentrations of NBS and et fixed concentrations of all other reactents under isolation conditions have been derried out. In each experiments concentration of MBS was always lower than that of animo acid at least five times. The capalts of various experiments have been recorded in tables 3.1 - 3.8, 3.9 - 3.16 and 3.17 - 3.26 in ordidation of olycine, alening and valine respectively. The value of sem - order new constant i.e. ( 2 ) in each table has been determined from the slope of the curve dram between remaining 1986 and tion. The slope is determined at fixed time when bandy 10 - 15% reaction has proceeded. The value of [NBS] at which ( -ds/as) has been determined is designated as [1967] in each table. I ridium (III) chieride has been written as Ir(III) in each table.

	4.00x10"-4	[daycine] .	2.00×10 <sup>-2</sup> M
	4.00×30 <sup>-2</sup> %,		4.90×10 <sup>-6</sup> H
wi	1.00×10 <sup>-2</sup> M,	[Hg (DAG) 2] =	3.34×10 <sup>-3</sup> н

# Temperature 30°C

	W/1800) W OE hypo	( EAEMAN)			W L	32 3.0 °
· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	ir mai neimpennaidindie ingdie eerste period period die vir	A Property of the Park of the	· 「「「「「」」、「「」、「「」、「「」、「」、「」、「」、「」、「」、「」、「」	· · · · · · · · · · · · · · · · · · ·	
00	7.20					
05	5.76					
	4.72					
	4.00					
20	3.66	% %	3.15		1.23	
25	3.33					
	2.76					
	2.70					
40	2.32					

[NBS] = 
$$9.00 \times 10^{-9}$$
 . [Naycine] =  $2.00 \times 10^{-9}$  . [Let 1] =  $4.60 \times 10^{-9}$  . [NS (NA)] =  $3.34 \times 10^{-9}$  .

# Temperature 3000

	as of byto	CHRY J. R 10 M	(- <sup>dc/</sup> dt) × 10 <sup>7</sup>
	(V1800)	な   個性を開催性性を持ちます。 できない 大学 (単一) というしょう (一) (一) (単一) (単一) (一) (一) (一) (一) (一) (一) (一) (一) (一) (	
00	9.00		
05	8.22		
10	7.66		
20	6.33		
	5.40	4.60	1.30
	3.50		
	3.02		
70	2.76		

[ms]	6.67×10-4,	[dycine]	***	2.00×10 <sup>-2</sup> M
[Hal]	4.00%10 <sup>-2</sup> M,	[train]	100	4.80×10 <sup>-6</sup> M
Г	1.00::10 <sup>-2</sup> m.	Ma (OAC)		3.34×10 <sup>-3</sup> M

# Tomposaturo 30°C

Time	ml of hypo	[NBS] x 10 M	( ( ) × 10 7
	12.02	distance and state of the state	na productiva visita i ilia di municipi di ilia di ili
	10.70		
100	8.98		
	8.30		
	7.04	6.20	1.61
	5.96		
	5.12		
60	4.40		
70	3.96		

#### Will Sal

[NBG] = 8.00 x 10 %. [Glycine] = 2.00x10 %.

[NGL] = 4.00x10 %. [X\_GUIL] = 4.80x10 %.

[NGL] = 1.00x10 %. [NG (0x6)<sub>2</sub>] = 3.34x10 %.

# Termporature 30°C

21mo	al of hype (4/882)	consequidad describes described described described described de la contraction de l	( (E) × 10 (C)
	- <b>7.506</b>	ngerandarin nakata tahun 1976-ya sarahin katanggalat sanjah ya nahini tahun salampangan dalamban katangan kata	
05	6.50		
\$0	6.14		
20	5.42		
30	4.74		
40	4.10	7.45	3.08
60	3.40		
00	3.12		
200	2.84		

## Namporetaire 30°C

fuln.)	ml of hypo (n/882)		(	1 L-1 5-1
	11.72			
0.5	10.82			
10	10.04			
20	9.76			
40	7.02	12,30		3.34
60	6.18			
	5.40			
	4.74			
170	4.62			

## 2032 3.5

[NBS] =  $16.67 \times 10^{-4}$ M, [Glycine] =  $2.00 \times 10^{-2}$ M [NGL] =  $4.00 \times 10^{-2}$ M, [Lettri] =  $4.80 \times 10^{-4}$ M [KGL] =  $1.00 \times 10^{-2}$ M, [NG (OAC) 2] =  $3.34 \times 10^{-4}$ M

	enterior or receive and the second se	enante entre	( * ) x20 *
(m3.77)	<b>∜√490)</b>		N
		编辑 黄河朝鲜 《神经》 "李明明" "李明" "李	
05	7.02		
10	5.90		
20	4.94		
30	4.44	15.20	4.00
50	2.90		
70	2.36		
	2.16		
130	1.98		

rime (ain.)	na of hypo	E \$188.55] ** ** 3.0 **	( de ) 210 7 M L -1 s-1
ocalisari raris serentamente se emiliferente.	g and the second se	an jurasi pama an penerupahan dan eser dan dan dan dan berakan an penerupahan dan dan dan dan dan dan dan dan	
OS.	8.62		
10	7.94		
	6.84		
30	5.85	18.40	4.62
40	5.04		
60	3.86		
90	3.30		
100	2.52		

### PARTAE 3 .0

rime Min.)	ml of hypo ( n/490)		(電)×10 <sup>7</sup> H L <sup>-2</sup> s <sup>-2</sup>
00	12.20		
05	10.76		
10	9.78		
20	8.42		
30	7.20	22.90	5.02
40	6.04		
50	5.49		
60	4.80		
80	4.20		

[MBS] = 
$$4.00 \times 10^{-1}$$
M. [Alanine] =  $2.00 \times 10^{-1}$ M

[MC1] =  $10.00 \times 10^{-1}$ M. [EQUID] =  $4.80 \times 10^{-1}$ M

[MC1] =  $1.00 \times 10^{-2}$ M. [HS  $(0.40)_2$ ] =  $3.34 \times 10^{-2}$ M

Temperature  $30^{\circ}$ C

	23.550	mil of hypo (1/2002)		( The laste?
<b>Pideol</b>		इन्हरूकको व्यक्तिक स्थापन	paragram in sing second play in the control of the	
	00	7.20		
	05	0.66		
	10	6.40		
	20	5.82	3.75	0.70
	30	5.20		
	40	4.70		
	60	3.68		
	80	3.02		
		2.56		

[NBS] = 
$$5.00 \times 10^{-2} M$$
, [Alanine] =  $2.00 \times 10^{-2} M$   
[NCI] =  $10.00 \times 10^{-2} M$ , [In (LII)] =  $6.60 \times 10^{-4} M$   
[NCI] =  $1.00 \times 10^{-2} M$ , [NCI (LIC)] =  $3.34 \times 10^{-3} M$ 

# Properture 30°C

rice (min.)	m2 of hypo (4/2802)	recupera recursidad a recursión consecutar que designar acresidad en circular de deservición consecutar de consecutar de la c	(一般) x 10 <sup>7</sup>
	englinear cinci sa interviendo de cincillando en esta esta esta esta esta esta esta esta	AN MARKANINE AN BEST STEEL	
05	8.54		
10	8.14		
20	7.52		
30	7.02	4.75	0.04
	5.32		
70	4.32		
	3.90		
310	3.12		

[ms]		6.67×10 <sup>-4</sup> M,	[Nanino]	**	2.00×10 <sup>-2</sup> N
[ [ [		10.00x10 <sup>-2</sup> M.			4.90×10 <sup>-4</sup> N
[ka]	44	1.00x10 <sup>-2</sup> H.	[Hg (0×c) <sub>2</sub> ]		3.34≈30 <sup>-3</sup> и
		7000	acumo 30°C		

man.)	al of hypo (4/1902)		
OC .	11.90		
0.5	21.54		
<b>X</b> 0	10.74		
20	10.18		
	8.24		
	6.92	6.30	
	5.50		
33	4.72		
110	3.92		

## T. M. 2. 12

17777320	rawn.	is is	30°C	

Time (min.)	ma of hypo (4/890)		( de ) 210 /
00	7.06		
05	6.48		
	6.32		
20	5.88		
40	4.64	7.60	1.36
60	4,20		
90	3,60		
120	3.32		
160	2.20		

### TASLE 3.13

	alf of hypo	[mbs] x 10%	(學)x10 <sup>9</sup>
(min.)	<b>\$1/890</b> )	d that the species is not any the state of the species of the spec	H L 3
00	11.72		
05	10.98		
10	10.50		
20	9.64		
40	0.60		
	6.82	12.60	2.00
110	5.74		
	5.08		
200	4-95		

### Tank 3.14

[NBS] = 
$$16.67 \times 10^{-2} M$$
. [Alanine] =  $2.00 \times 10^{-2} M$   
[NCI] =  $10.00 \times 10^{-2} M$ . [Ig (DAC)] =  $3.34 \times 10^{-3} M$   
[NCI] =  $2.00 \times 10^{-2} M$ . [NG (DAC)] =  $3.34 \times 10^{-3} M$ 

Time (min.)	al of hypo		( TE ) x10 <sup>7</sup>
	and the second control of the second control	ngerindeker) dun plan tahu desiki oran iliki -1967-yari simalifantunga radi sendriliki sahab dalambak at saya	
05	6.06		
10	6.72		
20	6.22		
40			
	4.76	16.00	2.16
90	4.20		
120	3.94		
180			

## 2.03 2 3.15

[NB-]	-	20 -00x10 4.	[Almine]	Till.	2.00::10 <sup>-2</sup> M
	137	10.00x10 <sup>-2</sup> M.	[Ir(III)]		4.50):10 <sup>-6</sup> //
		1.00×10-2	[Hg (D/IC) 3]		3.34×10 <sup>-3</sup> N

rine (min .)	m3 of hypo (4/430)		( 流 )×10
Additional and American and American and American and American	E-E	At 2004 and region community of the control of the	
05	9-14		
10	7.84		
20	7.38		
	6,54	19.00	2.60
	5.24		
100	4,62		
2.40	4-34		
200	3.40		The later than the property of the second of

### TAME 3.16

 $[NBS] = 25.00 \times 10^{-9} M$ ,  $[L_1 \times 10^{-1}] = 2.00 \times 10^{-9} M$   $[RC1] = 10.00 \times 10^{-9} M$ ,  $[L_2 \times 10^{-1}] = 4.80 \times 10^{-9} M$  $[RC1] = 1.00 \times 10^{-9} M$ ,  $[RO_1 \times 10^{-1}] = 3.34 \times 10^{-9} M$ 

	ed of hypo		(常)×10 <sup>7</sup>
(mi.p.)	6:/430)	·····································	
00	20.70		
05	10.26		
10	9.34		
20	9.26		
	8.46	24.00	2.60
70	6.98		
100	6.06		
140	5.34		
200	4.80		

## 7.00 3.17

[NDS]	***	4.00×10-4M,	[veline] =	2.00x10-2
		4.00x10 <sup>-2</sup> H,	[x*(xxx)]-	4.80×10 <sup>-6</sup> H
	蝴	1.00x10 <sup>-2</sup> m.	[HQ (D. G)2]	= 3.34±10 <sup>-3</sup> H

	Leso	6./1960)	[MBS] <b>x10</b> M	(	OF 121	S
· · · · · · · · · · · · · · · · · · ·		n sign er reksir stare kelandir, desen dan Euro i Siam spirmer reken dan altara laparene	化甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基	all the sale is a constant of the sale of	egerolikasione.	
	5	7.12				
1	0	6.96				
	0	6.64				
4			3.90		0,53	
	iO	4.74				
	<b>X</b>	3.70				
		3.10				
	N)	2.34				

## 3.1

[NEE] = 5.00×10 %, [Veline] = 2.00×10 %

[EG1] = 4.00×10 %, [X, GIX)] = 4.80×10 %

[EG1] = 1.00×10 % [Hg (0/e)] = 3.34×10 %

Time	ml of hypo (4/1860)	grande, soograndere uitersekengerinder deutsparinier voor en vinsestekenderinderinderinderinderinderinderinder	( de ) x 10 x
	9.32	·····································	
05	6.90		
30	6.70		
20	7.06		
40	6.40	4.90	0.64
60	5.42		
00	0.34		
200			
320	2.72		

	time (min.)	64/1850)	[mas] × 10 m	( 35 )×10 9
displace on	00	ran panaga ranggan panggan pan Li Sanggan panggan pan	in the state of the	
	05	12.13		
	10	11.92		
		10.63		
	40	9.30	6.40	0.84
	60	7.42		
		4.52		
	100	4.52		
	130	3.52		
				and the second s

#### 70ML 3.20

[100 mg]	00x30 41,	(Veline) =	2.00x10 <sup>-2</sup> M
	00x10 <sup>-2</sup> M,	[realis] =	4.80×10 <sup>-6</sup> M
[KCA] = 1.	.00=10 -2 M.	[Hg (Dr.C) 2]	= 3.34×10 <sup>-3</sup> /

Mae	ml of hypo (1/949)	ne saja aran antangga a san antangga antangga antangga antangga antangga antangga antangga antangga antangga a [	( 3	) × 10	
CO	yan autorio an'i siminana di mandale di mandale mandale mandale mandale mandale mandale mandale mandale mandale	<b>30.00% (1986)</b> (1986) (1986) (1986) (1986) (1986) (1986) (1986) (1986) (1986) (1986) (1986) (1986) (1986) (1986)			
05	7.42				
10	7.36				
20	6.76				
40	5,82				
60	4.92	7.70		2.00	
90	4.09				
120	3.03				
250	2.32				
200	1.98				

### 7/11/2 3.23

[MBS] =  $13.33 \times 10^{-6} M$ , [Valine] =  $3.00 \times 10^{-6} M$ [MC1] =  $4.00 \times 10^{-6} M$ , [Let III] =  $4.00 \times 10^{-6} M$ [MC1] =  $1.00 \times 10^{-6} M$ , [Let OAC)<sub>2</sub>] =  $3.36 \times 10^{-6} M$ 

# Tooperature 30°C

	Timo (mina)	ml of hypo 6:/948)		(元) × 10 / 11 11 11 11 11 11 11 11 11 11 11 11 1
West	OO	angun samanan kasanan kasanan 122 da	ering gelektioner von einig mit mat verschiede der zu der versche spektenen von der eine Alfans Millen Millen	kir en Takulant dier der ihre kante kontre in versche Talling der State Talling der State Talling der State Ta
	05	12.44		
	10	12.08		
	20	21.42		
	40	10.26	13.00	3.56
	80	7.96		
		5.44		
	200	4.34		
	260	8.90		

## 7/81.8 3.22

[NOS] = 16.67×10<sup>-4</sup>M. [Valine] = 2.00×10<sup>-2</sup>M [NOS] = 4.00×10<sup>-2</sup>M. [1<sub>2</sub>(XXI)] = 4.80×10<sup>-4</sup>M [NOS] = 2.00×10<sup>-2</sup>M. [NOS (NOS)] = 3.34×10<sup>-4</sup>M

## Temporotare 30°C

	31 of hypo 11/460)	guardian represença i came calma calma calma calma na unidas i reconsideran de ilem cam alternatura de ilem ca [14853] III. 100 III.	(A) × 107
COO	necidas saucamente Lucinizardi de la primer des sente de del describitorios.	kingalasan cinara, da yar yar cida cida inga arrandah cida da kina inga arrandah sa kina inga arrandah sa sa s	
05	7.30		
10	7.32		
30	6.72		
40	3.82	16.20	1.78
60	5.02		
130			
	2.34		
240	1.32		

### TANK S.25

[NAS] = 
$$20.00 \times 10^{-3}$$
, [Valine] =  $2.00 \times 10^{-3}$ M

[NCI] =  $1.00 \times 10^{-3}$ M. [NG One] =  $3.34 \times 10^{-3}$ M

Tomposature  $30^{\circ}$ C

negacione de la colonia de	u angan ka sa kanangan ka kananakan kananakan ka kananakan kananakan kananakan kananakan kananakan kananakan k Maranakan kananakan k		- and an analysis and an analy
(min.)	₽√450)	t till menge kallenging och som er som til kallen som er ste kallen som med er som hade sille som til	
00	9.20		
05	0.92		
10			
30	7.82		
40	6.68	19, 20	2.20
70	5.40		

3.02

2.36

190

250

[MGS] =  $25.00 \times 10^{-3}$ . [MGS] =  $2.00 \times 10^{-3}$ . [MGS] =  $2.00 \times 10^{-3}$ . [MGS] =  $2.00 \times 10^{-3}$ .

W. Good M	to a consequence of the state o	and the second	un sen er ver engen den gemente en er
	al of hypo	[100] × 10°N	
	Ba / AE/03	e night seine sin der seine seine der der seine se	
00	11.50		
05	11.20		
3.0	10.86		
20	10.24		
40	9.16	24.30	2.30
80	6.84		
140	4.80		
200	3.80		
260	1.08		
			and the second s

The kinetic results recorded in tables 3.1 - 3.6.

3.9 - 3.16 and 3.17 - 3.26 have been succentised in tables

3.25, 3.26 and 3.27 sespectively.

### 2/01/ 3.25

[Glycine] = 2.00x10 $^{-3}$ M, [MGI] = 4.00x10 $^{-3}$ M

[X 0XI)] = 4.00x10 $^{-3}$ M, [MGI] = 1.00x10 $^{-3}$ M

[MGI] = 3.34x10 $^{-3}$ M, response to 30 $^{-3}$ C

	[HBS]* # 10 <sup>4</sup> M	
	3.15	1.21
5.00	4.60	3.30
6.67	6,20	1.61
9.00	7.45	5.08
13.33	12.30	3.34
16.67	15.20	4.00
20.00	19.40	4.42
25.00	22.90	5-02

$$[Namino] = 2.000 \times 10^{-3} M$$
,  $[NC2] = 10.00 \times 10^{-3} M$   
 $[NAMINO] = 2.000 \times 10^{-3} M$ ,  $[NC2] = 1.00 \times 10^{-3} M$   
 $[NAMINO] = 3.34 \times 10^{-3} M$ , Therefore 30°C

	ENDES I A BOTA	( # 1 x 10
	3.75	0.70
5.00	4.75	0.84
6.67	6.30	1.10
9.00	7.60	1.30
13.33	12.60	3.00
25.67	16.00	3.16
20,00	19.00	2,60
25.00	24.00	2.60

## 1 HU2 3.27

[valor] •	2.00x10 <sup>-2</sup> M,		4.00×30 <sup>-2</sup> M
	1.00×10-2M	[IRGXI)	] = 4.80×10 M
[so orela]	• 3.34×30 <sup>-3</sup>	7.0	pomare 30°C

[886] > 2041		(
4.00	3.90	O.53
5.00	4.60	0.64
6.67	6.40	0.86
3.00	7.70	1.00
13.33	13.00	1.66
15.67	16.20	1.70
20.60	19,20	2.20
25.00	24.30	2.30

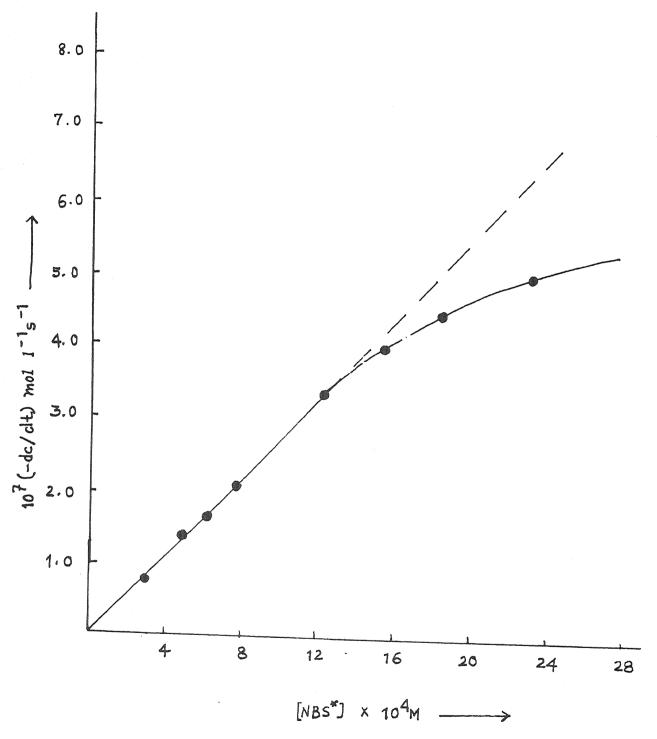


Fig. 3.1 Plat between (-dc/dt) and [NBS\*]  $[Glycine] = 2.00 \times 10^{-2} M, [Ir(II)] = 4.80 \times 10^{-6} M$ [HC1] =  $4.00 \times 10^{-2} M$ , [KCI] =  $1.00 \times 10^{-2} M$ [Hg(0Ac)<sub>2</sub>] =  $3.34 \times 10^{-3} M$  Temperature  $30^{\circ} C$ 

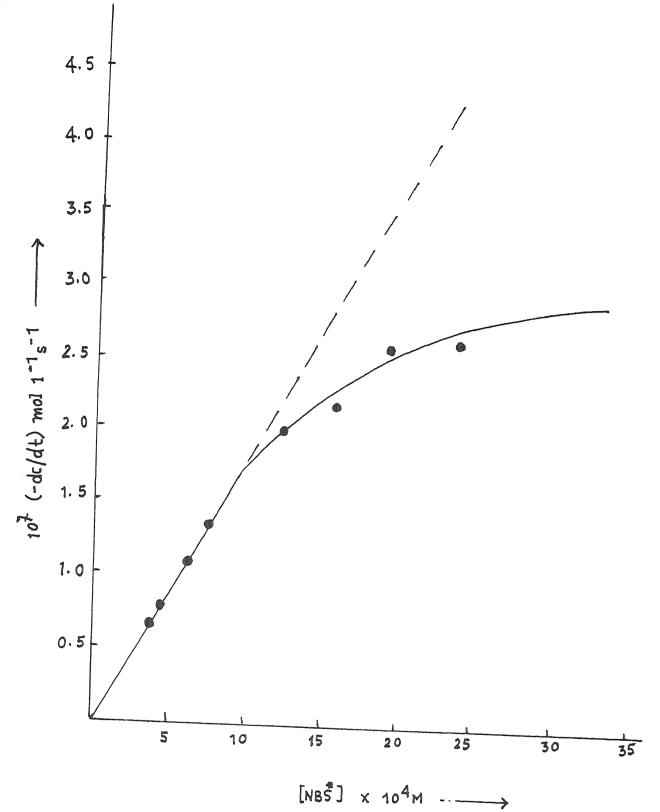


Fig. 3.2: Plot between (-dc/dt) and [NBS]

[Alamine] =  $2.00 \times 10^{-2} \text{M}$ , [Hg (OAc)<sub>2</sub>] =  $3.34 \times 10^{-3} \text{M}$ [HC1] =  $10.00 \times 10^{-2} \text{M}$ , [Ir(II)] =  $4.80 \times 10^{-6} \text{M}$ [KC1] =  $1.00 \times 10^{-2} \text{M}$  and Temperature 30°C

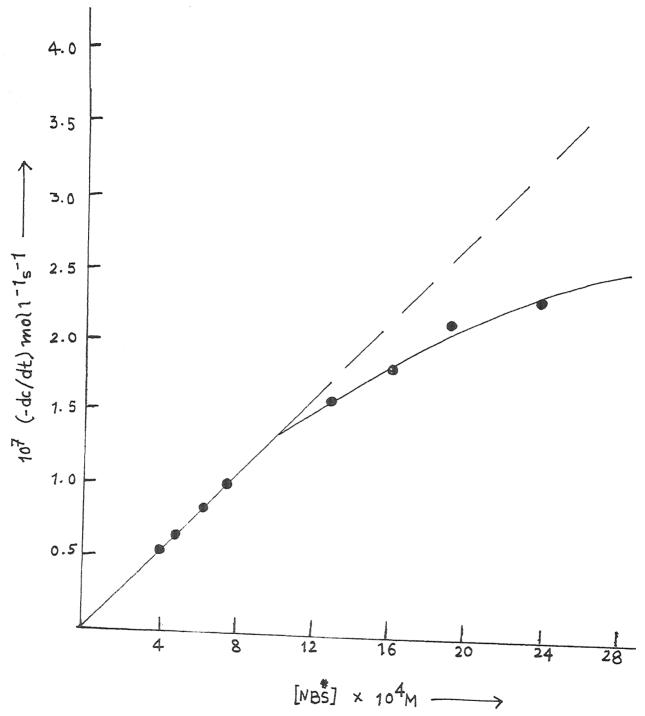


Fig. 3.3: Plot between (-dc/dt) and [NBS] [Valine] =  $2.00 \times 10^{2} M$ , [Hg  $(OAc)_{2}$ ] =  $3.34 \times 10^{3} M$  [HCl] =  $4.00 \times 10^{-2} M$ , [Ir (II)] =  $4.80 \times 10^{6} M$  [KCl] =  $1.00 \times 10^{-2} M$  and Temperature 30°C

3.25, 3.75 and 3.27 that in lover concentration range of this the value of ( de) increases linearly but at higher concentrations of MBS the value of ( de) tends to attain denotant values. This indicates that ordination of kinetics in MBS at its lower concentration made but first - order kinetics in MBS at its lower concentration range but first - order kinetics in MBS tends to some order at its highest concentration range.

plotted between ( ) and [885] . The curves are linear in lower concentration range of 886 while curve tends to attain the limiting value in higher concentration range of 886 while curve tends that exidetion of plycine, elemine sed value follows first corder kinetics in 885 at low [885] and first - order dependence on 885 at low [885] and first - order dependence on 885 at low [885] and first - order tends on 885.

#### C-1042-1911

COMPUTATION OF CAUSE OF BEAUTICS VIIING SUBSTITUTE AND SUBSTITUTE

SECURITY AND SECUR

In this chapter the main aim is to study the dependence of the title reactions on the concentration of reducing amino ecids vis. glycing, clanine and valine. Har this purpose, a set of experiments with verying concentrations of each of mains acid but at fixed concentrations of all other resutants have been carried out, Here all experiments have been conducted under isolation conditions i.e. concentration of H-brose succinicates has been kept comparatively lower than that of each of amino acid in each experiment. The kinetic date obtained in each experiments have been recorded in tobles 4.1 - 4.6, 4.7 - 4.12 and 4.13 - 4.13, Bore elso the value of ( ) how been determined by usual method as described in the provious chapter. The data of tables 4.1 - 4.6, tables 4.7 - 4.12 and tables 4.13 - 4.18 are for evidence of glycine, almine and valine respectively.

### TANK 4.1

# Temperature XOC

<b>\$480</b>	ul of hyp	[MBG] x 10°H	( % ) × 10 7
(min.)	(°/1,080)	adala 1966 - Ala magajarah, sani sana dalah apartama dana Salahan 30 Salah salah dari 1866	
00	10.78		
C5	9.70		
	9.20		
	3.60		
	6.13	9.00	1.12
45	7.46		
65	5.52		
U\$	5.7		
	4,92		
140	6.00		

[NBS] = 10.00010 M. [Clycine] = 0.67×10 M 
$$[NC1]$$
 = 4.00×10 M. [I=(IXI)] = 6.00×10 M  $[NC3]$  = 1.00×10 M. [NG (3/6)] = 3.34×10 M

## Terroritario 30°C

	ml of by to	er de la la grada i ne prima pala propriata de prima en aprima de la grada de la prima de la grada de la francis de la grada de la describación de la grada del grada del grada de la grad	( at ) × 107
	(4/1080)		N L S
	and and and an experience of the second of	的现在分词 "我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人, "我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人	
00	10.00		
	10.26		
10	9.62		
20	8.86		
	8.36	9.00	1.30
40	7.46		
	6.70		
	6.00		
	4.90		
125	4.02		

	= 10.00x10 n.	[dycine] = 1.00	10-3		
	= 4.00×10 <sup>-2</sup> 11,	[18011] = 6.00	×10 -6 <sub>M</sub>		
	• 1.00x10 <sup>-2</sup> M,	[Is (No) <sub>2</sub> ] = 3.34×20 <sup>-3</sup> m			
(mi.o.)	ed of hypo (1/1090)		( тас ) и 10 <sup>7</sup>		
	10.90	general description of general description of the description of the control of t			
0.5	70.03				
	9.30				
20	9.26				
30	7.22	9.00	2.02		
40	6.26				
60	4.90				
00	3.06				
<b>3</b> (0)	3.02				

### TOTAL 4.4

[MBS] =  $10.00 \times 10^{-5} \text{M}$ . [Glycino] =  $1.33 \times 10^{-5} \text{M}$ [MG1] =  $4.00 \times 10^{-5} \text{M}$ . [ $1.00 \times 10^{-5} \text{M}$ ] =  $4.90 \times 10^{-5} \text{M}$ [MG1] =  $1.00 \times 10^{-5} \text{M}$ . [Mg (MG)<sub>2</sub>] =  $3.34 \times 10^{-5} \text{M}$ 

Time	al of hyro	uju sija suuru suuru suuru suuru saan saan saan saan saan saan saan saa	( %) × 10 7
OO .	10 .80	agyakerida naakenaan sistee sustanii ilmii sulkistien voos ele akendeen ele oo oo oo akendeen ele oo oo oo ake	
05	10.22		
10	9.32		
20	8.04		
30	6.62	9400	2.92
40			
50	4.82		
70	3.32		
	2.70		

	m of bypo		Company of the second s
min.)	(-/1000)		11 1 S
00		പ്രത്യക്കുകൾ തുടങ്ങളെ വ്യവ്ധിക്ക് അവം വിവാഹന്ത് അവ്യത്ത്വേക്ക് വരുന്നു. വിവര് വരുന്നു വരുന്നു വരുന്നു വരുന്നു	是 Mayor 1976年1971 (AMENING) AND 1986—1986-01 (EUIN BEDOORNING) Armining (Mining) AND 1986-1986 (MINING) AND 19
03	9.54		
10	0.26		
20	6.49		
30	4.96	9.00	3.90
	4.15		
	3.36		
60	2.72		
75	2.00		
90	1.70		

### 1/4/10/21 6 × 6

1	[ww]	***	10.00×10-4,		ycine]	4.00×10 <sup>-2</sup> M
1	[HXX]		4.00×30 <sup>-2</sup> M,		(222)	4.80×10 <sup>-6</sup> M
	[xa]	200	1.00×10 <sup>-2</sup> M.	[Hg	(15c).]	3.36830 <sup>-3</sup> M

Time (min.)	ml of hypo (1/1090)		( de )×10-7 M 1-1 s-1
00	10.80	matikan mandi intermedikaan eri terimi in intermeti matika salah salah matika samunatan disaba meresu su seperahan a	ので、「一般ので、から、こうからのできたのです。 本本的な事を、このないとからのないできた。 「「「「「」」」
05	8.02		
10	6.04		
3.5	4.04	9.00	7.78
20	4.28		
25	3.72		
35	3.10		
	3.02		
50	2.78		
	4 . 75		

4.7

Persponiture 30°C

71.00	mi of hypo		( SE )×10
(min.)	01/965)		M 1 4 5 4
andra at militare in the title of a constraint	10 × 64	ानक्षित्रकार का रहेक व नाम के इस का इस का किया है। इस का का का किया का	
05	8.40		
10	8.28		
20	8.12		
40	7.68	9.00	0.36
70	7.08		
1.10	6.28		
	4.76		
260	4.00		

#### TABLE 4.0

### Composeduce Moc

Time	al of hypo	Disal 210 %	( "QC ) x 10 <sup>7</sup>
	*	er e traksiggingsprotester et fleste figserigen alle figseren. De stiet f. de beste et folke et folke et folke	378 - Maria George descript, Salestania grande antique esta esta esta esta esta esta esta est
00	8.64		
0.5	8.48		
	8.36		
20	8.30	9.00	0.56
30	7.68		
<b>S</b>	7.00		
	<b>6.66</b>		
	6.02		
140	4.92		
260	3.02		

#### nas di

$$[max] = 10.00 \times 10^{-10}$$
  $[max] = 1.00 \times 10^{-10}$   $[max] = 1.00 \times$ 

# Tusposuture 30°C

(%) × 10 <sup>7</sup>	[SINS] * **********************************	mi of hypo \$4/865)	There is
	de la constantina de		
		9.36	0.5
		G.28	10
		7-96	20
0.70	9.00	7.28	46
		6.24	****
		5.34	110
		4-30	
		3.56	

#### TABLE 4.10

[HBS] = 
$$10.00 \times 10^{-9}$$
, [Alenine] =  $1.33 \times 10^{-9}$ M  
[KAL] =  $10.00 \times 10^{-9}$ M, [KAL] =  $1.00 \times 10^{-9}$ M  
[I = (LII)] =  $4.80 \times 10^{-9}$ M, [HS (DAC)] =  $3.34 \times 10^{-9}$ M

・ 「「「「「「」」」、「「「「」」」、「「」」、「「」」、「「」」、「「」」、	大学 はない ないかん かんかん かんかん かんかん かんかん かんかん かんかん かん		
Time	ml of hype	[mbs] crio m	(一般 )×107
	M/355)	and the state of t	N 1 2 3 5 1
00	8.64		
05	8.30		
10	7.96		
20	7.40		
40	6.52	9.00	0.92
70	5.74		
110	4.78		
190	3.66		
260	3.30		
315	3.30		

### 7:32 4:11

# Tanpozaturo 30°C

			The second secon	ess.
	ns of hypo (M/865)	Children and the second control of the secon	(電) × 10 <sup>7</sup>	
	and the article of the second	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	1959
00	8.64			
0.5	8.19			
10	7.00			
20	6.96			
40	5.08	9.00	1.30	
60	4.90			
	4.12			
120	3.53			
1.00	3.02			
			· · · · · · · · · · · · · · · · · · ·	

#### TABLE 4.12

[NEX] = 
$$10.00 \times 10^{-6}$$
M, [Alenine] =  $4.00 \times 10^{-6}$ M  
[NC1] =  $10.00 \times 10^{-6}$ M, [NC1] =  $1.00 \times 10^{-6}$ M  
[3.011)] =  $4.80 \times 10^{-6}$ M [NC (DAC)] =  $3.34 \times 10^{-6}$ M

### Tomperutare 30°C

and the second second			
Time	ml of hypo \$1/865)	[MBG] MAG	( %) × 10 <sup>7</sup>
00	8.64	ter a demotive i in in the design of the contract of the contr	Physical Control of the Control of t
05	7.44		
10	7.12		
20	6.08		
30	5.28	9.00	2.66
40	4.53		
60	3.82		
80	3.42		
110	3.02		

## Tan per ture 30°

		the state of the s	
Time	ml of hypo	Establis 3 3 th section of the secti	( = 32 ) × 10 7
manager and extensions for a service of the later beautiful to	(1) · · · · · · · · · · · · · · · · · · ·	ing the state of the contract	A CONTRACTOR OF THE PROPERTY O
00	7.64		
05	7.22		
***	7.16		
20	7.00	9.00	0.36
40	6.52		
70	6.20		
1.10	5,12		
260	3.33		
210	2.60		

### 2/31/2 4.16

# 

	nt of by	Carpara (and the contraction of the contraction to the contraction to the contraction of	( % )×107
(alm.)	(1764)	per stage, sign mediant stage places sign menter stage of mediant stage and stage and stage of the stage of the	St.
	3 a regular Communication and		
	7.50		
10	7.38		
20	7.00	9,00	0.76
40	6.58		
70	5.60		
110	4.50		
160	3.62		
220	2.00		

#### TABLE 4.15

		al of hyso	[:m5] "n104m	( of )×107
		(±/764)	Control was a second and the second	18 sa
· · · · · · · · · · · · · · · · · · ·	00	7.64	iki galangga ng maggapagan kana anun gagapanggagan samak maki ng magga anun sa tina na m	
	05	7.30		
	30	7.16		
	20	7.00		
	40	6.28	9,00	0.84
	70	5.12		
	1.10	4.24		
	360	3.20		
	220	2.62		

Time	al of hypo 6/764)	e place una manda de adequada escribir de seguin partir de la compansión de la compansión de adequada contracta  [	( TE )×107
naryanja stolen e konsenserativisti.	neen periodici de la	King Comment of the State of th	(A) (1994) (B) (1995) (B) (B) (B) (B) (B) (B) (B) (B) (B) (B
05	7.46		
	7.10		
30	6.74	9.00	2.10
40	5,02		
70	4.90		
320	3,94		
160	2.50		
220	2.22		

### 77636 4.12

Paraportation 30°C

24.832	al of hypo	DBS J * 104	( THE ) 12 10 7
(01.15.)	01/764 <b>)</b>	· · · · · · · · · · · · · · · · · · · ·	M 2 S S
00	7.64		
05	7.28		
10	6.90		
30	6.44		
40	5.72	9.00	1.25
60	4.78		
	3.84		
400	3.42		
120	2.00		

### 9.332 4.38

	tal of hypo	e in der vertre i man spec etam i de ti nen specialistic per verenten roma etam etam etam etam etam etam etam [] [] [] [] [] [] [] [] [] [] [] [] [] [	( ************************************
	en, palan hilin isi, kantangkanadadakin pandalan (kupi ne i urap halika birikka kaneeli kali k	(1964年)	given had i kann 1890 - 2a-skaan kaleer salee ya darii dhaybada ahan daran ka mada ili daran ka ka ka ka ka ka
05	7,00		
30	6.52		
20	5.60	9,00	2.52
	4.92		
	4.23		
	3.84		
	3.36		
100	2,36		

The kinetic require of tebles 4.1 - 4.6, 4.7-4.12 and 4.13 - 4.18 have been suggestioned in tables 4.19, 4.20 and 4.21 respectively.

### 

Enycino] x 10 <sup>M</sup> X	M L 5'		c <sub>1</sub> he
- magaining connecessary connection on the temperature of the above in class of the above and the above and the above ab	1.22		2.40
0.67	1.39	1.33	2.20
1.00	2.02	2.24	2.24
2.33	2.52	2.80	2.13
2.00	3.90	4.33	2.17
4.00	3.90	6.60	2.16

[MRS] - 9.00×10 M (ac which (-w/de) was determined

Svorege kg = 2.24×10-2 M 143 5-1

### 7425 4.20

[ms] = 10.00.10 %.

183 = 10.0 GH10 -2 M

[KC1] = 1.00×10 H,

In (III) = 4.80×10 4

[mg bre] 2] = 3.34×10<sup>-3</sup>m. Temperature 30°C

	M L ' 5	Σ\ []	10 <sup>2</sup> k = 1 21 + 2 [Alenine
0.50	0.36	0.40	0.80
0.67	0.96	0.62	0.98
1.00	0.%	0.78	0.70
	0.92	1.02	0.77
2.00	3.3	1.53	0.77
4.00	2.66	2.95	0.74

[ mas] - 9.00mm of at which ( 1 ) was decommend

-verse kg = 0.70x10-2-1;41 ;-1

#### 7/431.5 4.21

[NRS] = 10.00×10 %. [ICI] = 4.00×10 % [XCI] = 1.00×10 % [XCI] = 4.90×10 % [XCI] = 3.34×10 %. Temporature 30 °C

Mount control	( % )=10 <sup>7</sup>		
enterente de emplos de descrito de la composició de la co		0.62	0.62
1.25	0.74	0.88	0.45
1.67	0.84	0.93	0.96
2.00	1.30	1.22	0.61
2.50	1.25	1.39	0.96
5.00	2,52	2.80	0.56
	Communication of the control of the	interpretation of the state of	

[mas] = 9.00 x 10 a or which ( ) was determined

(verage kg = 0.59x10 - 11+1 g-1

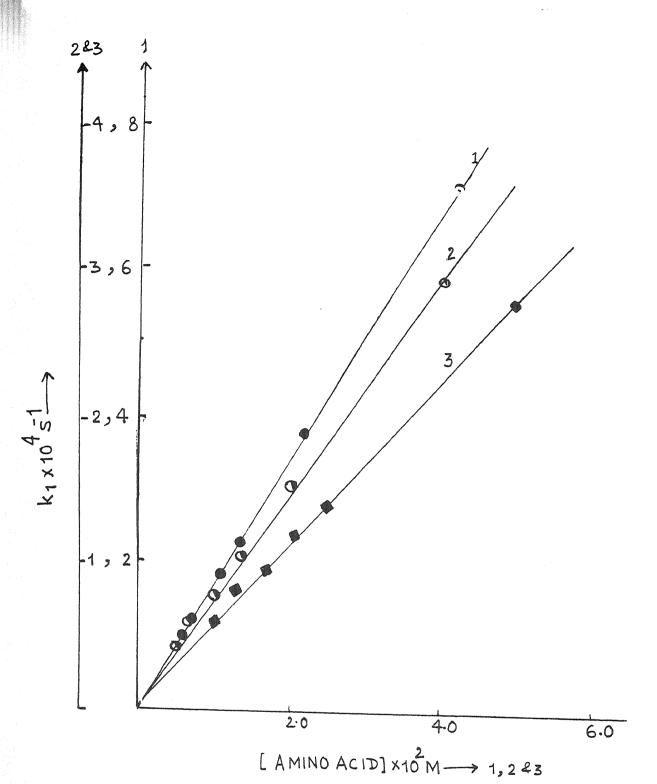


Fig. 4.1: plot between k1 and [Amino acid]

(1) → GLYCINE Under the conditions of Table 4.19.

(2) → ALAnine Under the conditions of Table 4.20.

(3) -> Valine under the conditions of Table 4.21.

when kinetic data of tables 4.19, 4.20 and 4.21 obtained in emidation of glycles, alamine and value are examined corefully, it is observed that on increasing the concentration of these emino acids the value of ( Te ) and k, increase linearly which indicates that acids exidation of these emino, follow first order dependence on the concentration of each mains acid i.e. glycine, alamine and value.

The above observation regarding first - order kinetics in amino acids is, further, confirmed by plotting a graph between k, values and [caino acids]. A straight lime in exidation of each sairs acid is obtained (Fig.4.1). The slope of each curve gives the value of k. The graphical k, value thus obtained is close to average value of k, recorded in the bottom of tables 4.19, 4.20 and 4.21. The closeness in k, values obtained from tables 4.19, 4.20 and 4.21. And graph of Fig. 4.1 closely confirms first - order kinetics in emino acid.

#### GIANTEN V

SMOURCE OF GUERR OF REACTION VISION AND ACTUAL VISION ACTU

This chapter describes the dependence of the reactions (involving N-bergosuccinicalde as oxident and each of alycing, elamine and valing as reductanto in the provence of inidium (III) chioride en catalyst) on hydrochloric acid. In order to obtain this aim, a series of experiments with verying concentrations of hydrochloric ocid at fixed concentrations of all other reactants in oxidation of each of emino stide one dome. The results of such experiments have been recorded in tables 5.1 - 5.6, 5.7 - 5.12 and 5.13 - 5.18 in oxidation of glycine, alumine and valing, here also all experiments have been carried out under isolation conditions. The value of ( 2) here also has been determined by usual southed as described in 3rd chapter. Although on changing the wondentaction of FLI. the value of lenic seconds of the medium also charges. Since preliminary investigations have indicated negligible offect of lonic strength of the medium on the medium rate. Hence no effort was made to keep fonds utrength of the medium conscent.

### 1212 5.1

# Temperantson **X°**C

and the state of t	e construit de la	· 中国的人民主义,14 (1994),14 (1	(c) 为 (c)
Tine	ml of hypo	[NBS] NOM	( <del>)</del> )×10
	(·/1120)		
<b>व्यक्तिकार्वाक्षित्रकार्वे अन्तर्भावकार्वे अन्तर्भावकार्वे अन्तर्भावकार्वे अन्तर्भावकार्वे अन्तर्भावकार्वे अन्तर्भावकार्वे अन्तर्भावकार्ये अन्तर्भावकार्ये अन्तर्भावकार्ये</b>	新聞· · · · · · · · · · · · · · · · · · ·	an ang manggan ngan nga meninggan samangan ngan nganggan nganggan nganggan nganggan nganggan ngan ngan ngangga Tanggan nganggan nga	tak dan dagan dagan dagan dan dan dan dan dan dagan dan dagan dan dan dan dan dan dan dan dan dan d
00	11.20		
0.5	9.86		
30	8.48		
15	7.72		
20	7.02	9.00	3.30
30	6.00		
40	5.06		
60	4.00		
80	3.72		

[NES]	120	10.00×10-4	[lycine] = 2.00x10 <sup>-2</sup> n
		4.00×10 <sup>-2</sup> %,	$[1x(111)] = 4.90 \times 10^{-6} M$
[mail	100	1.00×10 2M.	[3g (0/c) <sub>2</sub> ] = 3.34×20 <sup>-3</sup> M

# Transportation 30°C

Time	evilve)		( % )×10 /
<u> </u>	y a principal principal control of the control of t	· · · · · · · · · · · · · · · · · · ·	The start of the s
<b>05</b>	30.30		
10	9.20		
20	7.84		
	5.99	9.00	2.52
40	5.93		
	5.24		
60	4.72		
00	4.20		

### 2/11/15 5.3

	400	10.00±10-41,	(dycine) =	3•00×10 <sup>-2</sup> H
[ Karl		5.00x10-2		4.80×10 <sup>-6</sup> 8
	***	1.00×10 <sup>-2</sup> M,	[lector]	= 3.34×10 <sup>-3</sup> /4

# 

	må of hypo (1/1120)	The adjunction of the control of the	
		adania dika ilipaka ilika kadaniaka ngapaja diki ilipin dan in national na nati dikanjan, di in dik	er ( a. 180 e ) A. 180 · 180 · 180 · 180 · 180 · 180 · 180 · 180 · 180 · 180 · 180 · 180 · 180 · 180 · 180 · 1
00	11.20		
05	30.53		
10	9.52		
20	8.32		
30	7.08	9.00	2.22
50	5.68		
	4.86		
	4.42		
110	4,28		

[MBG] = 
$$10.00 \times 10^{-3}$$
, [Gayeine] =  $2.00 \times 10^{-3}$ M

[MGI] =  $6.67 \times 10^{-3}$ M, [Lettr] =  $6.60 \times 10^{-3}$ M

[MGI] =  $1.00 \times 10^{-3}$ M, [MGC] =  $3.34 \times 10^{-3}$ M

Timo	mi of hypo	[MMS]	( de )×10	
(min.)	6/1120)		N S	
a ya ya garanaga alama alama ka	en en sperimente en	aggerland sign statisticken eine verk verk viller in statische Albe eine Walter in Statische Statische Statisch	indek (1969-1935) — Al (1975) y telepit (telepit telepit telep	
05	20.70			
10	9.84			
	8.66			
40	5.00	9.00	2.06	
	5.72			
	4,66			
100	4.30			
	3.90			

	200	10.00x10 <sup>-4</sup> N,	[alyeine]=	2.00(8:10 <sup>-2</sup> N
[KI]	*	10.00×10 <sup>-3</sup> %		4.90×10 <sup>-4</sup> ×
[kcr]	422	1.00×10 <sup>-2</sup> m.	[11, 676].]	3.34x30***

# respondance 30°C

and the second s	man of bypo	Total Table	( *SC ) × 10 7
(mls: »)	<b>%/1120)</b>		
galapa ngeri sa sarahaka ina camananananananananan OES	pay in secure procurements and distributed the entertainment of the secure secu	andikana, semin-ulau sa sensi sa sebanah pengenjah tanah sisi melah sesah ilam isang ilam tengan semperan me	实实现的心态情况 "444-1",由于"446-1",也可以"446-1876"。 1276-1486-1486-1486-1486-1486-1486-1486-148
05	10.78		
3.0	10.10		
20	9,20		
30	0.60	9.00	3.4
60			
90	5.36		
120	4.72		
150	4.22		

Transportation 30°C

13.00	eal of hypo	HOOK ESSUE	
(as.n.)	0:/1120)		M 1-1 5-1
00	a caran son a san ann an san an san an tao an t La caran san an tao	·····································	-bada-robus da, vilar aren, sepadangana, ak-in-di-apppanahan-dari dappanahan-dari dappanah
05	\$0.99		
10	20.36		
20	9.86		
40	8.76	9.00	0.84
70	7.30		
100	6.20		
130	5.36		
160	4.54		

		10.00×10-4,	[Alentes] = 2.00m10 m
	***	2.50x10 <sup>-3</sup> x	[1, (III)] = 4.00×10 <sup>-6</sup> H
[KG]	400	1.00×10 <sup>-2</sup> M	[mg (DAC) 2] = 3.34x20 <sup>-3</sup> M

# tempore aire 30°C

	tide of hype	Control and the control and th	
00	0.20		
05	7.48		
10	7.08		
	6.03		
	5.48	9.00	2.26
40	4.70		
30	4.14		
65	3.40		
95	2.50		

### 7454.6 5.8

聯	10.00×10 <sup>-4</sup> M,	$[Alenine] = 2.00 \times 10^{-2} M$
쭇	4.00×10 <sup>-2</sup> M,	[Iz (III)] = 4.80×10 <sup>-6</sup> M
48	1.00x10 <sup>-2</sup> m.	[Hg (OAG) 2] = 3.34×10 <sup>-3</sup> H

	anna inkan melalah menimperakanan dan dan dan dipentikan dan dan dan dan dan dan dan dan dan d	· · · · · · · · · · · · · · · · · · ·		les, estigation contracts
Time (min.)	61/830)		( "de ) x10"	
00	8.20			
05	7-52			
10	6.80			
20	6.40	9.00	1.94	
40	4.80			
60	3.62			
80	3.20			
100	2.48			
1.20	2.00			

### 2AR 5.0

	10.00x10**4,	[Alanine] = 2.00x10 <sup>-2</sup> N
	210 <sup>-2</sup> M,	[1: (XXX)] = 4.80×10 <sup>-6</sup> m
[ka]	1.00×10 <sup>-2</sup> M.	[m; (0ac) <sub>2</sub> ] = 3.34x10 <sup>-3</sup> m

## Tomporacure 30°C

rime (min.)	ml of hypo	namen kan mengangan pengangan kenangan pengangan pengangan pengan pengangan	(一震 )×10 <sup>7</sup> N 1 <sup>-1</sup> s <sup>-2</sup>
	8.20		
05	7.76		
18	7.50		
20	6.74		
40	5.42	9.00	1.62
80	3.62		
	3.42		
120	2.74		

#### 2/31/2 5.10

[NBS] = 10.00×10<sup>-1</sup>N, [Alenine] = 3.00×10<sup>-2</sup>N

[NC1] = 6.67×10<sup>-1</sup>N, [x<sub>2</sub>(xxx)] = 4.90×10<sup>-1</sup>N

[NC1] = 1.00×10<sup>-1</sup>N, [N<sub>2</sub>(0Ac)2] = 3.34×10<sup>-1</sup>N

Time (ain.)	m2 of hypo 61/820)		( 3 × 10 7 × 10 7 × 10 7
00	8.20		
05	7.80		
70	7.60		
20	6.92	9.00	1.46
40	5.60		
70	4.04		
100	3.34		
130	2.72		
160	2.56		

		10.00×10 4.	(Almain)	2.00×10 <sup>-2</sup> M
	4	10.00×10 <sup>-2</sup> n,	[Irail] •	4.80×10 <sup>-6</sup> N
[KG]		1.00×10 <sup>-2</sup> N.	(B) (DAC) 2 -	3.34:30 <sup>-3</sup> N

	ogyd 3c .ke	English and a special	( 意 )×10 <sup>7</sup>
(man.)	<b>(√820)</b>	arrownings and rouge constraints who related the profile the plantings of the rouge. The individual terms are related to	H 1 * 4 * *
00	9.20	ag generalise agency in significant and an extension of the contension generalistic service and generalise and	
05	9.04		
10	7.64		
20	7.08		
40	6.08	9.00	1.06
***	4.94		
100	4.12		
130	3.22		
160	2.92		

#### 74765 5.12

nd.n.)	m) of hypo	n oen [ann]	
00	9.20		
OS.	9.09		
30	7.84		
20	7.42	9.00	0.02
40	6.32		
70	5.34		
100	4.36		
130	3.56		
160	2,70		

### 19818 5.13

		10.00×10 M,	[valies]=	2.00x10 <sup>-2</sup> M
	铷	2.50×10 <sup>-2</sup> N,	[[[[]]]]	= 4.80×10 4
[kdj]		1.00×10-2	Ing OAc) 2	= 3.34×10 <sup>-3</sup>

Temperatura 30°C

elemental province of the second seco		- Sagan dan 1 mm sinaka saka dan dan danka sakaka sakaka danka danka danka danka danka danka danka danka danka -	
Timo	ed of hypo	[mas] alo m	( # )×107
(alm.)	<b>%1/820)</b>		M 1-1 S-1
		त्रकारकार नहीं के नहीं पर नहीं होते नहीं हैंने नहीं कि तो नहीं कि तहीं कि तहीं कि तहीं कि तहीं हैंने नहीं हैं कि तहीं कि तही	dandraken ausgestaden. Prot son en Protes in des en den Franz das en det en det et de de de de de de de de de d La companya de
00	0.40		
05	7.44		
10	7.06		
20	6.04		
30	5.50		
40	4.72	9.00	2.28
	4.14		
66	3,46		
	2.50		

<b>QA</b>	10.00×10 4 <sub>M</sub>	[Valina] -	2.00×20 <sup>-2</sup> M
糖	4.00×10 <sup>-2</sup> H,		4.90×10 M
松海	1.00×10 <sup>-2</sup> H.	[10000]	= 3.34:10 <sup>-3</sup> H

# Temperatura w<sup>o</sup>c

* The second	al of bypo	Market Televis	( E ) 1130
<b>***</b>	61/820)		
designation of the second seco	in Color (Color Angle Angl Angle Angle Ang	<b>अविवेद्यां के के के किए हैं के किए किए के किए किए किए के किए किए किए किए किए किए किए किए किए किए</b>	第三元·4·1977年 1984年1月1日 1986年1986年1986年1888年1888年1888年188日1日 11日日 11日日 11日日 11
00	0.20		
0.5	7.50		
10	6.06		
20	6.34		
	5.60	9.00	1.94
40	4.80		
	3.64		
	3.26		
300	2,50		
130	2.00		

TABLE 5.15

[N 887]	10.00×10 4,	[valine] = 2.00x10-4
	5.00x10 -2m.	[1 = (111)] = 6.80×10 =6
[xa]	1.00×10 <sup>-2</sup> n.	[Hg (DAG) 2 = 3.34H10 -3H

Temperature 30°C

Time (min -)	mi. of hypo (4/820)		( % )×10 7
00	8.20		
05	7.74		
10	7.46		
30	5.74		
40	5.44	9.00	1.64
60	4.06		
00	3.44		
200	3.42		
120	2.70		

#### 2A33.5 5.16

[NES] = 
$$10.00 \times 10^{-9} M$$
, [Valing] =  $2.00 \times 10^{-9} M$   
[NEL] =  $6.67 \times 10^{-9} M$ , [X.0XII] =  $4.80 \times 10^{-9} M$   
[NCL] =  $1.00 \times 10^{-9} M$ , [Mg (DAC)] =  $3.34 \times 10^{-9} M$ 

- needle media mengam a normal mendelin or or a mendelin mengan sebah mendelin mende	M og thloo	ar san suscensia alla propositi di suori di suo Esta 33.3.2.2.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.	( % )×10 <sup>7</sup>
(min.)	(4/820)		м 1-2 з-1
geographic and residence control of the control of	8.20	ন্ত্ৰপূৰ্বা পৰিত ভাৰীক্ষা নিৰ্মাণ কৰিব। শ্ৰীমান পৰিব 'ভাৰপোৰ'ব বিশ্ব নিৰ্মাণ কৰিব পৰিব পৰিব পৰিব নিৰ্মাণ কৰিব পৰিব নিৰ্মাণ কৰিব।	
<b>2</b>			
05	7.78		
10	7,60		
20	6.90		
40	5.60	9,00	1.46
70	6.04		
100	3.34		
1.30	2.72		
150	2 - 56		

### RADE STA

10.00x10 4,	[valine] = 2.00x 10 <sup>-2</sup> M
10.00×10 <sup>-2</sup> M.	[I= (XII)] = 4.80×10-6
1.00×10 <sup>-2</sup> M.	[Hg (DAC) 2] = 3.34x10 -3

fine (nin.)	sal of hypo  (1/620)	[ms] nio	
00	8.20		
05	8.02		
10	7.64		
20	7.08		
40	6,05	9.00	1.06
70	4.94		
100	4.09		
130	3.22		
160	2.32		

### 2.21.5 5.10

rime (min.)	ml of hypo (4/820)		( = )×10 <sup>7</sup> H 2 <sup>-2</sup> s <sup>-2</sup>
00	8.2		
05	8.04		
30	7.84		
20	7.43		
40	6.32	9.00	0.90
70	5.36		
100	4.34		
130	5.56		
160	2,66		

The kinetic results recorded in tables 5.1 - 5.6, 5.7 - 5.12 and 5.13 - 5.18 have been our marised in tables 5.19, 5.20 and 5.21 respectively.

#### 2.33.2 5.19

	10.00×10 <sup>-4</sup> H.	[dlycine] = 2.00x10 <sup>-2</sup> H
[KCI]	1.00×10 <sup>-2</sup> m,	[IECIII] - 4.80×10 <sup>-6</sup> H
(Hg (D/c)	2] = 3.34×10 <sup>-3</sup> m,	Tempe zeture 30°C

[1K3] z wan	( "de ) = 10" N 3" 1 10"	k <sub>3</sub> × 30 <sup>4</sup>	
2.50	3.98	4.31	
4.00	2.52	2.80	
5.00	2,22	2.47	
6.67	2.06	2.30	
<b>30.0</b> 0	1.32	2.47	
13.33	0.94	0.93	
		and the second s	and the same of th

[NBS]" = 9.00x10" M et which ( -de/et) was determined

[NBS] = 
$$10.00 \times 10^{-6}$$
 M. [Alenine] =  $2.00 \times 10^{-6}$  M. [XCI] =  $1.00 \times 10^{-6}$  M. [In (DAC) 2] =  $3.34 \times 10^{-6}$  M. Temperature  $30^{\circ}$  C

[HG1] x 10 <sup>2</sup> N	( " ) × 10 7	k, x 10
**************************************	entregen consum sin decommendamentale - in scorring de deport de secondament de militario de desirio de desirio.	
4.00	1.96	2.15
5.00	1.62	1.00
6.67	1.46	1.62
10.00	1.06	1.10
13.33	0.82	0.91

[NDE] = 9.00mio 4 at which ( 2 ) was determined

[NES] - 10.00×10 m.	[vol 500] = 2.00×10 N
[KC1] = 1.00x10 - 4.	[1 (111)] = 4.80×10 <sup>-6</sup> H
Hy (DAC) 2 = 3.34x10 -3	Temperature 30°C

[:K3] x 10 <sup>2</sup>	( -@ )×20 <sup>7</sup>	k <sub>2</sub> × 10 <sup>4</sup>
AND		angin constitution dan Pandarusian - an disabilihanggain ngun diandrian apparintus simulumin
2.50 4.00	2.20	2.53
5.00 6.67	1.64	1.62
10.00 13.33	1.06 0.80	0.89

[1005] a 9.00 x 10 m at which ( ) was plotted

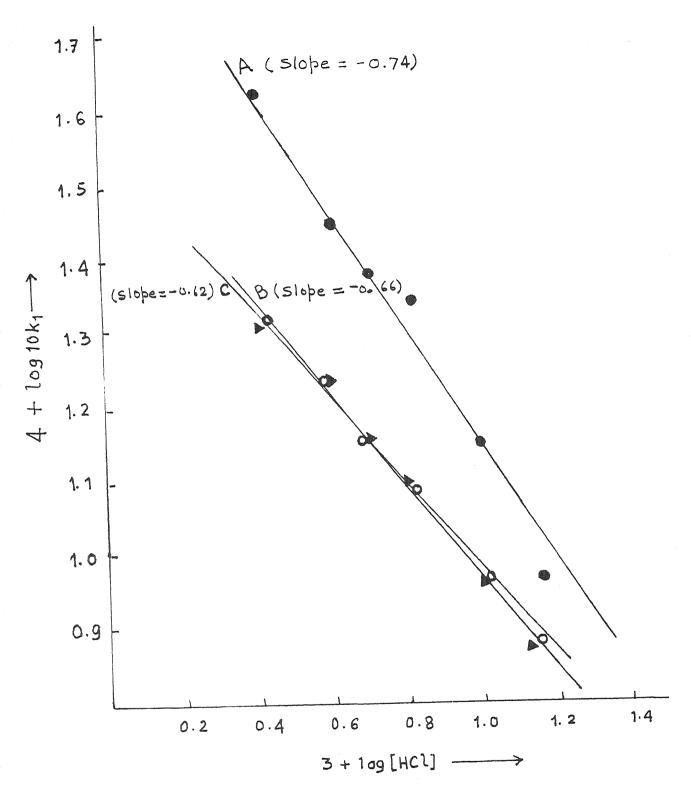


Fig. 5.1: Plot between log k1 and log[HCl]

A - GLYCINE: under the conditions of TABLE 5.19.

B -> ALANINE: under the conditions of TABLE 5.20.

C -> VALINE: under the conditions of TABLE 5.21.

tables 5.19, 5.20 and 5.21 that the first - order rate constant decreases on increasing the concentration of hydrochloric edic in exidation of each of glycine, alanine and value by M-bennesuccinimide. This indicates that order of the aforesaid recox systems with respect to hydrochloric acid is negative fractional as no relation—ship is observed between [MCL] and kg.

Purchor, the above experimental finding as regards to order in MCL is confirmed by graphical method on plotting log k, against log MCL in each amino acid exidetions (21g. 5.1A, 5.1B and 5.1C). A straight line with negative fractional slope is observed in each graph. This conditus that order in MCL is negative fractional in oxidation of glycine, slenice and value.

CONTROL OF CARD OF BUSINESS AND ACTUAL ACTUA

COMPUTATION OF GROSS OF REACTION OF THE RESERVE TO DESCRIPTION OF AMERICA ACTUS
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redox system as homogeneous catalyst. In this chapter an attempt has been made to determine the order of the reaction with respect to I<sub>x</sub>(III) in all redox systems involving N-bromosuccinimide as exident and glycine, alanine and value as reducing substances. For this purpose a number of experiments with different concentrations of I<sub>x</sub>(III) but at fixed concentrations of all other reactants in exidation of each amino acide have been carried out and the results of such experiments have been recoxied in tables 6.1 - 6.6, 6.7 - 6.12 and 6.13 - 6.18 in exidation of glycine, alanine and values respectively. Here ( at ) values in each case have been determined as usual as described in 3rd chapter.

## TABLE 6.1

[NBS] = 
$$30 \times 00 \times 10^{-4} \text{M}$$
, [IF (III)] =  $0.60 \times 10^{-6} \text{M}$   
[NCI] =  $4.00 \times 10^{-2} \text{M}$ , [Glycine] =  $4.00 \times 10^{-2} \text{M}$   
[NCI] =  $1.00 \times 10^{-2} \text{M}$ , [NG (1/40)2] =  $3.34 \times 10^{-6} \text{M}$ 

## Comporature 30°C

Time (min.)	ml of hypo (4/490)		(
00	9.76		
20	9.62		
40	7.94		
80	6.86		
120	5.84	18.40	1.08
160	5.06		
240	3.90		
340	3.12		
400	2.54		

	*	20.00×10 M,	[IFCIII] =	1.20×10 <sup>-4</sup> M
	***	4.0 Gx10 "4,	[dycine] •	4,00x10 4
[KG1]		1.00×10 <sup>-3</sup> M .	[ig tore)]	= 3.34×10 <sup>-3</sup> M

Time	mi of hypo (4/490)		( "dc )×10" N 1-1 5-1
0	9.78		
10	8.64		
30	7.96		
60	6.82	19.40	2.30
60	5.02		
00	5.04		
120	3.98		
160	3.10		
200	2.56		

#### AND A

[NBS] = 
$$20.00 \times 10^{-6} M$$
, [In (III)] =  $1.80 \times 10^{-6} M$   
[HEL] =  $4.00 \times 10^{-6} K$ , [Glycine] =  $4.00 \times 10^{-6} M$   
[KCl] =  $1.00 \times 10^{-6} M$ , [Hy (OAG) ] =  $3.34 \times 10^{-6} M$ 

fine (min.)	ml of hypo (4/490)		( % )×10 <sup>7</sup>	ne de la constante de la const
00	9.76			
10	8.34			
20	7.54			
40	6.38			
60	9,43	18,40	3.32	
90	4.82			
120	3,62			
160	2.00			
<b>30</b> 0	2.36			

## WILL 6.4

[HELL] = 20.00×10<sup>-2</sup>M, [1.011] = 2.40×10<sup>-2</sup>M [HELL] = 4.00×10<sup>-2</sup>M, [Hell (1/40)] = 3.34×10<sup>-3</sup>M

24.000 (ml.12.4)	m) of hypo (4/490)		
· <b>可能是是</b> · · · · · · · · · · · · · · · · · · ·	riauri metalampuntakan dalai sekaratkan sebarakan puntu metalankan pelantukan dalam beranda melalan dalam bera Sebarakan pendangan berandari sebarakan sebarakan pendangan berandari berandari berandari berandari berandari	alkariakininen (m. 1801-1869) eriki Arrivia puosiksi alkarikika alkarikika satu satu akrivia eriki eriki eriki	er varie virtueliste dalla asternario esti unita vista sistemasti de masti discissi di sistemasti di sistemasti
00	0.76		
10	8.00		
20	7.13		
40	5.00	18.40	4.14
60	5.36		
80	4.62		
120	3.40		
140	3.00		
160	2.64		

#### 7A3LC 0.3

Time (min.)	m) of hypo \$4/490)	[mas]xx0 m	
00	9.76		
05	0.26		
10	7.52		
20	6.40		
30	5.40	18.40	6.56
40	4.06		
60	3.60		
80	2.02		
200	2.40		

#### 243.6 6.6

		29.00×30	[alyclos] =	2.00x10 <sup>-2</sup> m
		4.00×10 <sup>-2</sup>	[reciii]=	5.40×10 <sup>-6</sup> 14
(KCI)	聯	1.00×10 <sup>-2</sup>	[m the]	= 3.34×10 <sup>-3</sup> M

Time	ml of bypo fe/490)	en Landen en e	( % )×10"
00	9.76		
05	8-02		
10	7.23		
20	6.02		
30	5.04	18.40	9.82
40	4.36		
50	3.400		
60	3.26		
80	2.68		

$$[NDS] = 20.00 \times 10^{-9} M$$
  $[I_{*}CIII] = 0.60 \times 10^{-9} M$   $[NDS] = 1.00 \times 10^{-9} M$   $[NDS] = 1.00 \times 10^{-9} M$   $[NDS] = 1.00 \times 10^{-9} M$   $[NDS] = 3.36 \times 10^{-9} M$ 

Time (min.)	ml of hype 64/430)	[BBS] RION	
00	0.56		
20	0.14		
40	7.86		
160	6.52	19.00	0.65
280			
400	4.62		
500	4.28		
600	3.66		

[NBS] = 20.00×10	$[x_*(xx)] = 1.20 \times 10^{-6} \text{M}$
[H3] = 10.00×10 N.	[alanine] = 4.00x10 - 4
Tras 7 = 1.00×10-2 M.	[19 (0/c) <sub>2</sub> ] = 3.34×10 <sup>-3</sup> ×

# Temperature W<sup>o</sup>C

dagalana da sarah sakina kalendara sakadalan sakadalan daga Consep arti Jenesena	MI of 1950		and the second s	
	(4/4:30)			
· · · · · · · · · · · · · · · · · · ·	AND THE PROPERTY OF THE PROPER			
00	0.56			
	0.16			
20	7.90			
60	7.24			
90	6.50	19.00	3.446	
140	5.30			
200	4.68			
2/40	4.36			
320	3.70			

## 77.EE 6.9

[MBS] = 
$$20.00 \times 10^{-6} \text{M}$$
. [1.011] =  $1.00 \times 10^{-6} \text{M}$   
[MCI] =  $10.00 \times 10^{-6} \text{M}$ . [Alenine] =  $4.00 \times 10^{-6} \text{M}$   
[MCI] =  $1.00 \times 10^{-6} \text{M}$ . [MG (0/MC) 2] =  $3.34 \times 10^{-6} \text{M}$ 

And the second s	a of hypo		( E ) 33.00
(miss.)	(4/430)		
· · · · · · · · · · · · · · · · · · ·	interestation in the contraction of the contraction	inerregiseligie. Bri i verdriederliche i illebrysische Amerikaan voorschieber bestellijken de voorschieber Add	
00	8.56		
10	7.96		
20	7.68		
40	7.00		
60	6.56	19.00	1.94
	5.24		
100	5.52		
140	4.5%		
500	4.34		

## 1/18 5.W

	20 .00x30 4.	$[x_*(xxx)] = 2.40 \times 10^{-6} \text{M}$
	10.00×10 %,	[Alanino] = 4.00x10 4
[ka] •	1.00×10 <sup>-2</sup> M,	[1g (bise) <sub>2</sub> ] = 3.34x10 <sup>-3</sup> M

<b>11</b> 10	al of hypo	a gazar galaranda angara nasar ngari yaki ingaranda ingari ngari inaya manakan an akasa sa sanak sakad [] 2   1965 ]	( === )×10	
(min.)	<b>(4/430)</b>		113-1-3-1	
00	9.36			
05	8.18			
10	7.92			
20	7.30	19.00	2.56	
40	6.50			
70	5.32			
<b>3</b> 00	4.62			
130	4.30			
160	3.76			

## TMLS 6.11

Time	ed of hypo (4/430)	[ NBS ] NBC M	( == )×10 <sup>7</sup> n 3 = 4
inguamente con esta a a consideración contributación de describidados de d	erga, sous-opergage soper-operiopergage page page of sous-operage and sous-operage and sous-operage operage of	· · · · · · · · · · · · · · · · · · ·	以通水、原料1.50年,自然的不同時間發展的。不過時間,可以同時,可以同時,可以可以可以可以可以可以可以可以可以可以可以可以可以可以可以可以可以可以可以
05	7.88		
3.0	7.68		
20	7.02	19.00	3.82
40	6.28		
70	5.06		
100	4.26		
130	4.00		
160	3.60		

## TARE 6.13

[rest]		20.00::30 M,	[Alanine]	4.00x10 <sup>-2</sup> N
[ICA]		10.00×10 <sup>-2</sup> m,	[xroxx)] =	5.40×10-4
[KG1]	100	1.00x10-2 M.	[89 (0/0) 2]	3.34×30 <sup>-3</sup> n

**************************************	ed of type \$4./430)	20 12 12 12 12 12 12 12 12 12 12 12 12 12	( % )×10 7
「「「「「「」」」というないできないできない。 「「「」」というないできない。 「「」」というないできないできない。 「「」」というないできないできない。 「「」」というないできないできないできない。 「「」」というないできないできないできないできないできないできないできないできないできないでき		- Age-valor Labor-Laboral Architecture (Architecture) (Architectur	ar rillari - Saka i Sarri canak keleburah sakan sakaka ilah basah ripir 4 mah silapira dibandan dalam dalam da
00	9.56		
05	7.62		
30	7.46		
20	6.82	19.00	5.60
30	6.36		
40	6.00		
60	5.20		
90	4.62		
\$00	4.00		

#### 723128 6.10

[NBS] = 20.80×10<sup>-2</sup> M. [Valine] = 6.00×10<sup>-2</sup> M [NSL] = 6.00×10<sup>-2</sup> M. [3.01×1)] = 0.60×10<sup>-6</sup> M [NSL] = 1.00×10<sup>-2</sup> M. [NG (0/m)] = 3.34m10<sup>-3</sup> M

Timb (mir.)	ml of hypo (4/460)		( 元 )=10 <sup>7</sup> H 1 <sup>-2</sup> s <sup>-2</sup>
	an dalamanan kan kan kan kan kan kan kan kan kan	istori ritgan dair ritgan may ini isaa siini kala kala ka	
00	9*50		
20	8.98		
40	8.46		
80	7.84	10.20	0.56
3.60	6.70		
290	5.48		
360	5.02		
420	4.68		
500	3.02		

[HEL] = 
$$20200 \times 10^{-6} M_{\odot}$$
 [Valine] =  $6.00 \times 10^{-2} M$   
[HCl] =  $6.00 \times 10^{-2} M_{\odot}$  [Eq (DAG)  $_{2}$  =  $3.34 \times 10^{-3} M$ 

Time (ain .)	al of hypo (4/460)	n mparaturi si dan mpara sa utahir rash makeun di cakhitating pinan dan pangan mining misir makeuh in di [85966] 34.440	( % )×10 7
gegeneralise plante til som var men som som var		; novver-jeluggsjudgesde navjereke inde op ofte holde dagspool asteroasjelende villed	gga (у gg н g
10	8.94		
20	8.50		
40	7,82		
80	6.72	19,20	1.00
340	5.52		
190	5.04		
220	4.62		
260	3.80		

#### TABLE 6185

$$[NSS] = 20 \times 10^{-6} M$$
,  $[Valine] = 4.00 \times 10^{-6} M$   
 $[NSS] = 4.00 \times 10^{-6} M$ ,  $[S_{1}(SXS)] = 1.80 \times 10^{-6} M$   
 $[NSS] = 1.00 \times 10^{-6} M$ ,  $[N_{2}(SXS)] = 3.34 \times 10^{-6} M$ 

And the state of t	sal of hype	(NESS) #20 <sup>4</sup> M	( " )×10"
	64/460)	handinaring same in the same i	N 3 - 4 5 - 4
00	9,20		
10	8.72		
20	9.22		
30	7.86		
40	7.55	19,20	1.452
60	7.02		
	6.26		
1.10	5.63		
140	5.00		
100	4.62		

## 1/2016 6.16

## Tomporature 30°C

fain.)	ml of hype (4/460)	ages, de refere del antico de la destación como como como como como como como com	( 36 )×10 <sup>7</sup>
00	9,20		
20	9.60		
30	8.02		
30	7.52		
40	7.36	19,20	2.14
60	5.66		
90	6.04		
110	5.30		
140	4.70		
180	4.33		

## 1201 6.17

A STATE OF THE PROPERTY OF THE		the state of the s	
<b>Clano</b>	m) of hypo	[NBG] X40 M	( # )×10,
(ndm.)	<b>(1/460)</b>		M 1-1 5-1
<b>्रेक्ट्रावीक्रावेश्यात्रकः</b> र सम्बन्धः विविद्यात्रम् स्थापः स्थापः । स्थीनना स्थापः । स्थापः । स्थापः । स्थापः । स्थापः	aner Conspilation betyden i dywr eiliadd gwraidd generall yr ar diwr eilian eilliadd ar diwr eiliadd yr diwr a Cannaeth a cynnedd yr ar yr eiliadd gwrai yr eilian y cynnol y cynnol y cynnol y cynnol y cynnol y cynnol y ch	alpenderense-dallen med dila selfe di "deliftallinge dila militalish figangay setong iastellar	२ को विकास कर अनुभाविक निकास के विकास के प्राप्त कर किए निकास के अपने के प्राप्त कर के अपने के प्राप्त कर के अ
00	9,20		
05	8.74		
10	9.24		
20	7.54		
30	7.04	a 19.20	3.06
40	6.24		
60	5.60		
80	4.82		
100	4.20		
120	3.69		

#### 2/33/2 6.30

[NBS] = 
$$20.00 \times 10^{-3}$$
 , [Valine] =  $4.00 \times 10^{-3}$  , [Lateral] =  $5.40 \times 10^{-3}$  , [NGL] =  $3.34 \times 10^{-3}$  , [NGL] =  $3.34 \times 10^{-3}$  ,

Camparatura 30°C

and the second s	ni of hypo	[NDS] xxx <sup>4</sup> n	
(ain.)	(4/460)	ang	
00	9.20		
0.5	9.63		
10	8.08		
20	7.34		
30	6.62	19.20	4.60
40	G.02		
	5.62		
60	5.28		
80	4.62		
100	4.06		

The kinetic results reported in tables 6.1 - 6.6, 6.7 - 6.12 and 6.13 - 6.18 have been summarised in tables 6.19, 6.20 and 6.21.

TABLE 6.19

The state of the s	ŷ ("秦 )×10 <sup>7</sup> ÿ n 1 <sup>-1</sup> s <sup>-1</sup>	š [ [ ]	M1 L 51
0.60	1,08	0.59	9.83
1.20	2.30	1.16	9,50
1.80	3.32	1,30	10.00
2,40	4.14	2.25	9,38
3.60	6.90	3.57	9.92
5.40	0.02	5.34	9.89

[NSS] - 13.40×10 h or which ( #) was determined

[NEW ] = 20.00 × 10 M. [Alamine] = 4.00 × 10 M

[NC1] = 10.00 × 10 M. [NC2] = 1.00 × 10 M

[NC2] = 3.34 × 10 M. Heaps zature 30 C

			M'LĪ
0.60	0.65	0.34	5.66
1.20	1.26	0.66	5.55
1.,00	1.90	1.02	5.66
2.40	2.56	1.35	5.62
3.60	3,02	2.01	5-60
5.40	5.60	2.99	5.54

[NBS] =  $19.00 \times 10^{-4}$ M at which (-dc/dt) was determined

[HDS] = 
$$20.00 \times 10^{-9} \text{ M}$$
 [Vol.576] =  $4.00 \times 10^{-9} \text{ M}$  [KG3] =  $1.00 \times 10^{-9} \text{ M}$  [KG3] =  $1.00 \times 10^{-9} \text{ M}$  [KG3] =  $1.00 \times 10^{-9} \text{ M}$ 

	Jacobson (1965) - Marie Patricina (1965) - Mar		M <sup>1</sup> L31
0.60	0.36	0.29	4.83
1.20	1.08	0.56	4.67
1.80	1.50	0.79	4.20
2.40	2.34	1.11	4.66
3,60	3.06	1.59	4.42
5-40	4.60	2.40	4.44

[mps] = 19.20x10 M at which ( ) was determined

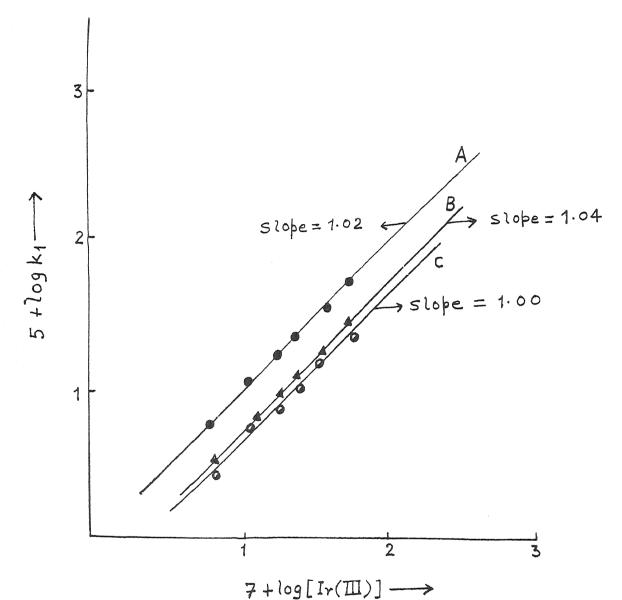


FIG. 6.1: A -> Under the conditions of Table 6.19 (GLYCINE)

B -> Under the conditions of Table 6.20 (ALANINE)

C -> Under the conditions of Table 6.21 (VALINE)

and 6.21 that on increases in direct proportionality which the value of k, increases in direct proportionality which shows that order of the reaction with respect to Ir(III) is one in oxidation of each amino acids used here. The constant values of k, also confirm that order in Ir(III).

when log by values are plotted against log [IrCIII].

a straight line with (Fig. 6.1) slope meanly one is
obtained. This shows that all recetions follow first -order
kinetics in Iridium (III) chi-oride in oxidation of all amino
acids used here. The constant ky values of tables 6.19.
6.20 and 6.21 confirm that order with respect to Ir(III)
is one.

DETERMINATION OF DEFENDENCE OF REACTIONS
OR CHECKIDE 1055 IN MBS-MAINO ACIDS REDGE

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# 7 • DETERMINATION OF DESIGNATION OF REACTION OF GROWING CONTRACTION OF THE ACTION OF T

In this chapter as attempt has been made to determine the effect of addition of chiefide ions on the rate constant of Ir (131) chloride datalysed exidation of slycing, alenine and valine by ocidic solution of M-boomsecoiniade. For this purpose in this chapter potassium chloride has been used as sounce of chloride long. In owier to obtain the atove ale, various experiments have been persound at different concentrations of potention chloside but at fixed concentrations of all other sections. It has been observed that meastions are not influenced by changing the concentrations of jotassium chloride. This stow sem effect of addition of chloride ions on reaction between MBS and each of amino acids. The kinetic results resorted in tables 7.1, 7.2 and 7.3 in semmerical form closely show nogligible offect of added chloride iors on the restion rate.

## 2/14/1/7/1

[HBS] = 10.00×10 4.	[mycine] = 2.00x10-2m
[HC1] = 4.00×10 <sup>-2</sup> M.	[1g(III]] = 4.80x10 m
[16] (DAC) 2] = 3.36x10 <sup>-3</sup> M.	Tomor Catalog 30°C

	k <sub>1</sub> × 10 <sup>4</sup>
1.00	4.33
1.50	4.38
2.00	4.30
2.50	4.32
3.00	4.29
3.50	4.31
4.00	4.28

[RRG] - 10.00×10 <sup>-4</sup> H.	Meron 100.5 [cation [A]
[HC1] = 10.00×10 H.	[18 (111)] = 4.80×10-6
[Hg (DAC) 3] = 3.34×10 <sup>-3</sup> H.	Temperature 30°C

[RGI] × 10 <sup>2</sup> /4	
1.00	2.53
1.50	
2.00	
3.00	
4.00	
5.00	
6.00	3.49
7.50	

[1835] = 10.00x10 <sup>-4</sup> H,	[yeline] = 2.00x10 4
[1k2] = 4.00x10 <sup>-2</sup> H.	[x (111)] - 4.80×10-6
[170 (D/c)2] = 3.34x30 <sup>-3</sup> m.	Tasperature 30°C

[KG2]14 10 34	
1.00	1.22
2.00	1.20
3.00	1.26
4.00	3.23
5.00	1.24
6.00	
7.30	3.34

## GIAZER VIZI

DEPSIDE ASSESSED AND ASSESSED BEING

> In the provent though seconds acetate her been uped as souvenger for homaide tons as homaids fors (reaction product) on interaction with NBS produced ar, which complicated the reaction by vecting emotion porallel oxidations, Mercuric acotate cen elso function as exident and catalyst, Hence in order to prove whother it acts in the present case as orident or not, some experiments were carried out with mercuric ecetate without adding MBS in the reaction mixture and it was observed that reactions did not proceed. Hence possibility of its action as asident is also out. Now here in the propent chapter on extempt to being made to see whether it is involved as datalyst or not. The results of experiments performed at different condentrations of mercaric acetate are recorded in tables 8.1. 8.2 and 8.3 which indicate negligible effect of memburic scenate proving that it is not involved as homogeneous catalyst.

2.24

2,22

2,26

#### 

[163 (D-C) 2] H 20 3H	
and provinces where the Anthre of the International States and Anthre States and Ant	2.24
2.50	2,26
1.75	2.20
2.00	2,27
2.50	2.22

3.00

3.34

3.50

	10.00×10 M,	[1631] = 10.00×10 N
	2.50×10 <sup>-2</sup> M.	[1, (111)] - 4.80×10 <sup>-6</sup> M
Alenino	= 4.00×10 <sup>-2</sup> m,	Temperature 30°C

Hig 60 kg 3 k 10 k	
1.25	2.95
2.50	2.93
2.00	2.93
2.50	2,98
3.00	2.96
3.34	2.95
3.75	2.90
4.00	2.90

	10.00×10 <sup>-4</sup> 15,	[HG1] = 4.00H10 <sup>-2</sup> H
	2.00×10 <sup>-2</sup> M.	$[x_*(111)] = 4.60 \times 10^{-6} \text{M}$
[valine]	- 2.00x30 <sup>-2</sup> s,	Tomestagned West

	[10 (0/0) 2]	34 3 30 4 50 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
<b>のでは、これでは、これでは、これでは、これでは、これでは、これでは、これでは、これ</b>	1.25	1.22
	1.50	1.20
	3.00	1.23
	2.50	1.24
	3.00	2.19
	3.50	1.25
	4.00	1.24
	5.00	1.22

DESCRIPTION OF PROTOCOLOGY

CHOOSE STATE OF THE STATE OF

CONTROL OF THE SEASON OF BUILDING OF BUILD

lonic strength of the medium plays an important mole in the field of Staby of reaction mechanism. It helps to detect the nature of mective species i.e. whether the reactive species are similarly charged or dissimilarly charged or one of them is neutral. Thus nature of macting species involved in the rate deverataing step is determined by means of kinetic states. In cader to obtain the above aim, a few experiments with different ionic strengths of the modium have been conducted at constant concentrations of all other reactions and results of these experiments have been Carrierisos in cables 9.1, 9.2 and 9.3 in exidation of clycice, alamine and valine respectively. These results clearly indicate regligible effect of variation of tonic strongth of the medium on the meaction into of the title morelons. Looks strongth of the modium has been varied by the addition of suitable assumts of sodium perchlorate.

## 7.15

[NBS] = 10.00×10 <sup>-4</sup> H.	[NA] = 10.00×10*3
[Alanine] = 1.00×10 <sup>-3</sup> m.	[RG1] = 4.00×10 <sup>-2</sup> M
[x_031)] = 4.90×10 <sup>-6</sup> H,	[10 KMC) <sub>2</sub> ] = 3.34×30 <sup>-3</sup> M

[#ec304]x304H	Tonic Stangth (Naid	1 10 10 10 10 10 10 10 10 10 10 10 10 10
		The state of the s
0.90	2.40	0.70
1.00	3.40	0.79
2.00	4.40	0.80
3.00	5.40	0.77
4.00	6.40	0.79
5.00	7.40	0.70
	9.90	0.79

[NBS] = 10.00×10 <sup>-4</sup> M,	[HLI] = 4.00×10 <sup>-2</sup> M
[veline] = 2.50×10 <sup>-2</sup> %.	[ECL] = 2.00x10 <sup>-2</sup> M
[1g (11)] = 4.80x10 6M.	[115 (3-0)-] = 3-3420 -3

RECLO & 10 H			99C 4
			1.39
3.00	2.60		1.38
2.00	3.60		1.38
3.00	4,60		1.37
4.00	5,60		1.40
5.00	6,60		1.38
7.50	9,10		1.37
	0.90 1.00 2.00 3.00 4.00	0.90 3.00 3.00 3.00 5.00 5.00 5.00	0.90 1.00 2.00 3.00 4.00 5.00

PROPERTY OF STREET OF ASSISTED OF COMMENTAL OF COMMENTAL

Smooths die to one of products of the title reaction. Hence it is essential to utury its effect on the rate of the mains acids by 1865. Hence in order to realise the above aim, a larger number of experimonts with different concentrations of execuniaide and at conscent concentrations of all other mectants were done the good to of various experiments obtained in exidation of glycine, plening and volice have been seconded in tobles 10.1 - 10.5, 10.6 - 10.10 and 10.11 - 10.15 respectively. It is clear from the data of aforeseld tables that increase in concentration of Succinimide in the reaction minture greenly influence the first - order cate constant obtained in exidation of aformain enim action by acidic solution of N-biberoussinship, succinimide offect also follow in decides; the executor species of nebromountaide in editic mode.

# 10.0

[NB6] = 10.00×10<sup>-4</sup>M. [Glycine] = 2.00×10<sup>-4</sup>M [ICI] = 4.00×10<sup>-4</sup>M. [Ig (NCI)] = 4.80×10<sup>-4</sup>M [IG (NCI)] = 3.34×10<sup>-3</sup>M

Succinimide = 1.25x10 N Temperature

Timo (min a)	mi of byco		3-1 3-1	
00	9.12			
05	6.82			
20	6.30	- 44.00	2.52	
20	5.26	9.00		
30	4.58			
40	4.26			
60	3.96			
	3.42			
300	3.04			

# PARLS 10-2

	10.00x10		ayar	w [ ex	2.00x <b>10</b>	a d
	4.00×10 <sup>-2</sup>	M.			4.80×10	<b>4</b> <sub>M</sub>
[KG] =	2.00×10 <sup>-2</sup>	***	ing (OM	c) ] (	a 3.34×10	
succin	inide =	1.43::10**			eraturo :	M <sub>O</sub> C

24.00	m 1 of hypo	edition in the state of the content and the state of the	500
00	0.32		
05	7.30		
10	6.64		
20	5.06	9.00	2,30
30	5.96		
50	4.66		
70	4.20		
<b>3</b> 00	3.64		
130	3.40		

[NTBS] = 10.00×10		[Glycine]= 2.00x10 M
[103] = 4.00×20-2		[1. (III)] = 4.80×10 <sup>-4</sup> ×1
[KC1] = 2.00×10-3	M	[Hig (DAC) 2] = 3.34×10 <sup>-3</sup> M
[mecininide] **	1.67×10	Tempo sostata 30°C

		al of bypo	e, esperie ma servició su como consentra de esperiencia esperie de esperiencia esperiencia esperiencia esperie
	ngin nggangga ngga sa ka nggangga nggan ngga sa nggangganga ng sa sa ng ng	(4/812)	(min.)
		8.12	area de esperante de como constituira de la presenta de la constituira de la constituira de la constituira de El CO
		9.42	05
		6.92	1/0
		6.28	20
2.06	9.00	5.74	30
		4.50	50
		4.36	
		3.76	100
	to the control of the	3.60	130

#### TABLE 10.4

		10.00×10 <sup>-6</sup> M.	[cayeice] = 2.00×10-4
	<b>C</b>	4.00×10 <sup>-2</sup> M.	[Irail)] = 4.86×10-6
		2.00×30 <sup>-2</sup> M,	[10 (0/6) 2 = 3.34×30 <sup>-3</sup> /1
[succ	len!	imide] = 2.00x10	3M. Temperature 30°C

Time	ml of hype (4/812)	[NBS ]mao n	
00	0.12	Against and control of the control o	
05	7.42		
10	6.94		
20	6.20	9,00	1.90
40	5.00		
60	4.30		
80	3.92		
120	3.16		
100	2.84		

#### 10.5

[NBS] = 10.00x30	[Glycine] = 2.00x10 <sup>-2</sup> M
[HC3] = 4.00×30 <sup>-8</sup> H.	[1. (LI)] = 4.00×10 <sup>-6</sup> M
[KC1] = 2.00m10 <sup>-2</sup> M.	[m (oze) ] = 3.35x30 3
[Succinimide] = 2.	ion <b>10<sup>-18</sup>m,</b> Temperatura 30 <sup>9</sup> C

timo (min.)	ml of hypo (4/012)	MOSK [SMR]	( # )x10 <sup>7</sup>
andreament and the second and the se	gan, y samu gan gani, mang samu gana samagan jaku, na masak si untan an make si untan an masa sama sama sa sam Sama sama sama sama sama sama sama sama	unturante (de la companya de la comp	is is indicated in the common state of the common and the common state of the common s
05	7.54		
30	7.02		
20	6.20		
40	5.52	9,00	1.55
60	9.86		
80	4.52		
120	3.64		
200	3.34		

#### 75B.8 10.6

[NBS] = 10.00×10<sup>-1</sup>M. [Alening] = 2.00×10<sup>-1</sup>M [NGL] = 10.00×10<sup>-2</sup>M. [L<sub>2</sub> (LLL)] = 4.80×10<sup>-1</sup>M [NGL] = 2.00×10<sup>-2</sup>M [NG (DAS)<sub>2</sub>] = 3.34×10<sup>-3</sup>M [Succipimide] = 1.43×10<sup>-3</sup>. Temperature 30°C

	MT OF 1970	- and provided a section of the control of the cont	( 77 ) 5.3.0	
(min.)	(A)	·····································		
00	8.84			
05	8.06			
10	7.62			
20	6-64	9.00	1.96	
40	5.56			
70	4.54			
1.10	3.64			
1.60	3.20			
220	2.76			

## ZAMA 10.7

[NB6] = 10.00x10<sup>-4</sup>M. [32x10] = 2.00x10<sup>-2</sup>M [NG1] = 10.00x10<sup>-2</sup>M. [Xr(XXX)] = 4.80x10<sup>-4</sup>M

[RG2] = 2.00 $\times 10^{-2}$  N. [Ny (DAC)2] = 3.34 $\times 10^{-3}$ M

Succinimide = 1.67x10 3, Tomperature 30 C

Time (min .)	m 1 of hype (4/894)	[mas]xxx m	( % )×10 <sup>7</sup>
80	in the state of the control of the state of	allegheler Faleri, Alerka allerder von dem Affal, derender Ver-Corberalette Falericalistische Arbeite	ikin-Park-up-um-uhisekan-sakaphakaphakaphakaphahaphahaphahaphahap
05	8.22		
10	7.68		
20	7.06		
	2.464		
40	6.04	9.00	1.00
70	4.96		
110	4.08		
160	3.66		
220	3.40		

## 2.3.3. 10.3

[NBS] = 10.00×10 M. [riemine] = 2.00×10 M

[NCI] = 10.00×10 M. [ $x_{\rm E} (x_{\rm E})$ ] = 4.80×10 M.

[NCI] = 2.00×10 M. [NU(DNC)] = 3.34×10 M.

[Succinimide] = 3.00×10 M. Temperature 30 C.

	21.00	ml of hype	[NRS] xao'n	( ** 1×10 <sup>7</sup>
	(min.)	(4/894)		
And the second s	00	and since a strong data productions of attachment and an operation in an infance of the signs of the	and the control of th	A filos (90) A tipo interviente en est como que o specimente des trapaciones en el establica en el establica e
	05	8.44		
	30	8.06		
	20	7.00		
	40	5.76	9.00	3.34
	70	4.88		
	120	3.98		
	160	3.64		
	220	3.53		

# TABLE 10.9

[HRS] = 10.00x10 M.	[Alanine] = 2.00×10 <sup>-2</sup> M
[KCL] = 10.00x10 <sup>-2</sup> M,	[I_ (II3)] = 4.80×10 M
[ECL] = 2.00×10 <sup>-2</sup> M.	[Hg (DAC) <sub>2</sub> ] = 3.34x20 <sup>-3</sup> H
[accinimide] = 2.50x10 -3.	Transportation co 30°C

	71.00	al of hypo	Los J xao	er til er til stårende på tre ellere stårestat stårende spr. 2 er. så junior starestat ellere propositionstate Linguage i 1200 2
A Company of the Comp	(CALTS + )	64/0 (94) Promotor stocki sharar waxayayayayayayaya		
	00	8.84	ा विकास करते हैं कि जिल्लाका है जिल्ला	
	0.5	8.66		
	10	9.30		
	20	8.04	9,00	0.96
	40	6.08		
	70	5.76		
	110	4.50		
	160	3.02		
	230	3.26		

#### 2N342 10.10

[NHS] = 
$$10.00 \times 10^{-9}$$
 M. [Alanine] =  $2.00 \times 10^{-9}$  M. [I. (III)] =  $4.00 \times 10^{-9}$  M. [EQ.1] =  $2.00 \times 10^{-9}$  M. [EQ.1] =  $3.34 \times 10^{-9}$  M. [Succinimide] =  $3.38 \times 10^{-9}$  M. Topocacuse  $30^{\circ}$ C.

	Time (uin.)	mû of hypo tu/884)	[NBS] x30 M	(
And the second	00	en er en	innergenter (tradition für für der der der der der der der der der de	n 14 - Anthon Arman Anthonomes and an article in protection and an inflat and inflation and inflatio
	05	8.56		
	10	8.38		
	20	0.12	9.00	0.75
	40	7.16		
	70	5.%		
	110	4.96		
	160	4.06		
	220	3.32		

# TABLE 10.11

[HHS] = 
$$10.30 \times 10^{-3}$$
 M, [Valine] =  $2.0 \times 10^{-3}$  M  
[HG1] =  $4.00 \times 10^{-2}$  M, [Hg (DAC)<sub>2</sub>] =  $3.34 \times 10^{-3}$  M  
[AGGInimide] =  $1.43 \times 10^{-3}$  M, Temperature  $30^{-3}$  G

All	al of hypo		entra de la companya
(min.)	<b>4:/396</b> }	and the second s	
00	8.56	man menerakan pengengan di sakura dan dan dan dan dan dan pengengan pengengan pengengan pengengan pengengan be	
05	6.32		
20	9.22		
20	7.70		
40	6.96	9.00	G.96
80	5.76		
3.40	5.02		
200	4.26		
260	3.44		

# 2AME 10.13

[NBS] = 10.00x10-4,	[valine] = 2.00m10 <sup>-2</sup> M
[RG1] = 4.00×10 <sup>-2</sup> M.	[Xg(III)] = 4.80×10 <sup>-6</sup> H
[KCI] = 2.00×10 <sup>-2</sup> M.	[Hg (D/C) <sub>3</sub> ] = 3.34×20 <sup>-3</sup> H
Succinimide] = 1.67x10	M. Tompeteture 30°C

Thms	al of hypo	[NBS] *xto*n	(景):407
(min.)	(v/e56)	a i- a - manifest processor interferences in a negative superior superior superior superior superior superior	M 1-1 5-1
00	8.56		
05	8.38		
20	8.36		
50	7.08	9.00	0.96
40	7.04		
80	5.74		
140	4.56		
200	3.04		
260	3.38		

# Table 10.13

[NHS] = 10.00×10 M, [Value] = 2.00×10 M [NC1] = 4.00×10 M, [2.012] = 4.80×10 M [NC1] = 2.00×10 M, [NG (DAD)] = 3.34×10 M [Succinimide] = 2.00×10 M, Trapersture 30 C

Time	ml of hype 64/836)	e direction and individual control and the con	( "SE ) 2107
00	to contrave on simulatina magazine perception of the contravers of	katikan para-nga tibur da si na ngalas na ngapat dipangan pangan pangan sa	elder i ver en
0.5	8,30		
10	8.12		
20	7.84		
40	7.12	9,00	0.78
60	5.96		
140	4.56		
200	3.74		
260	3.56		

## TABLE 10 ...

[NOS] = 10.00×10<sup>-2</sup> M. [Valine] = 2.00×10<sup>-2</sup> M. [I<sub>2</sub>(IXI)] = 4.80×10<sup>-2</sup> M. [KCI] = 2.00×10<sup>-2</sup> M. [My (DAC)<sub>2</sub>] = 3.34×10<sup>-3</sup> M. [My (DAC)<sub>2</sub>] = 3.34×10<sup>-3</sup> M.

Time	ml of hypo 01/856)		( % ) x 10 7
alderaldelikestikestikestikestisestestestestestestestestestestestestest	antari transari i sari usti uso mine usat natarian kanangi ina ngini ndinikan isa inak Si 🗸 💯	r stationed in the state of the	
05	9.36		
80	8.12		
20	7.80		
40	7.30	9.00	0.64
00	6.34		
340	4.92		
200	4.06		
260	3.72		

## TABLE 10.13

[NBS] = 10.00x10 M.	[Valine] = 2.00x10 2n
[HC3] = 4.00×10 <sup>-2</sup> H,	$[I_{\pi}(III)] = 4.80 \times 10^{-6} M$
[KC1] = 2.00×10 <sup>-2</sup> H.	[Hg (DAC) <sub>2</sub> ] = 3.34x10 <sup>-3</sup> N
Succiniaide = 3.33.x10"	3M. Temperature 30°C

Time (min.)	ml of hype (4/856)		( % )×10 <sup>7</sup>
00	8.96	and the second s	
05	9.46		
20	8.10		
30	7.84	9.00	0.54
40	7.20		
90	6.16		
240	5.02		
300	4.06		
260	3.62		

The results recorded in tables 10.1 - 10.5, 10.6-10.10 and 10.11 - 10.15 in exidation of glycine, elemine and value at various concentrations of speciminaide have been summarised in tables 10.16, 10.17 and 10.18 sespectively.

#### 2/13/13 10:16

MBS ] •	10.00×10-4 <sub>M</sub> ,	[dycine] =	2.00×10 <sup>-2</sup> M
[KC] =	2.00x10 <sup>-2</sup> M,	[1 <b>:</b> (111)] =	4-80×30 <sup>-6</sup> M
[HQ] .	4.00×10 <sup>-2</sup> m,	[Hg (DAC) 2]	• 3.34×10 <sup>-3</sup> M

Temperature 30°C

[Succinialdo] x 10 <sup>3</sup> M	(常)2307	k, × 10	
Balling of the property of the contract of the	n 2-1 6-1	aac <sup>-1</sup>	
1,25	2		
2.43	2.30	2.55	
1.67	2.06	2.30	
3.00	1.90	2.11	
2.50	1.56	1.73	
NBS 7 = 9,00x30 M ec v	high (-de/ <sub>de</sub> ) was		

## TABLE 10-17

	**	10.00×30	(Aye	ino]	- 2.	00x10	
[RGL]	螄	2.00×10 <sup>-2</sup> N			] •• 4	.80st10	M
		8.00×10 <sup>-2</sup> p	Hg (	Me)	2]**	3.34m	lo a

# Tampo zatura 30°C

[Succialaide] x to N	( 元 )=10 <sup>7</sup> n 1 <sup>-1</sup> s <sup>-1</sup>	k <sub>1</sub> × 10 <sup>4</sup>
1.43	1.94	
1.67	1.64	1.62
2.00	1.34	1.90
2.50	0.96	1.06
3.33	0.75	0.83

[man ] = 9.00:40 % as which ( %) was determined

#### 0.488 E 10.18

[NBS] = 
$$10.00 \times 10^{-4} M$$
, [Valine] =  $2.00 \times 10^{-2} M$   
[NCL] =  $4.0040^{-2} M$ , [Xg(XXX)] =  $4.80 \times 10^{-6} M$   
[RGL] =  $2.00 \times 10^{-2} M$ , [Mg(XMG)] =  $3.34 \times 10^{-2} M$ 

Tomporerane 30°G

	10 <sup>3</sup> N. ("\$)	) =10 <sup>7</sup>	L × 10 <sup>6</sup>
1.43	स्त्रियम् विकासकार का वार्षायकार के कार्यक्र के कार्यक्र में विकास कार्यक्र कार्यक्र में विकास कार्यक्र कार्यक	0.94	er version survivant en versioner en versioner en versioner en versioner en versioner en versioner en versione La companyation en versioner en
1.67		0.84	0.98
2.00		0.72	0.80
2.50		0.64	0.70
3.33		0.54	0.60

that

10.16 - 10.16, on increasing [Succinimide] the value of a

decreases showing negative effect of succinimide on the

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ACTUAL MEDIA

end amino acids vis. glycine, alabine and valine as owident and reductants respectively have been studied in the presence of iridium (IXX) chloride as homogeneous articles at 30°C in details. These spections have been studied at 35, 40 and 45°C. The results of such experiments have been recorded in tables 11.1 - 11.3, 11.4 - 11.6 and 11.7 - 11.9 in oxidation of glycine, alabine and valine respectively. It is clear from the data of results of temperature the resented is significently increased.

<b>MB</b> \$	108	10.00×10 %,	dycine .	2.00x10 <sup>-2</sup> N
HC1	<b>10</b>	4.00×10 <sup>-2</sup> %,	Ir(III) ·	4.80×10 <sup>-6</sup> H
20 <b>.</b>		1.00×10 <sup>-2</sup> M.	tig (Wc) <sub>2</sub>	= 3,34x30 <sup>-3</sup> H

# Temperature 35°G

gime (min.)	ml of hypo (4/928)	888 <b>210</b> M	
60	9.28		
05	7.82		
10	6.72		
20	5.24	9.00	4.50
	4.06		
40	3.62		
30	3,24		
60	3.20		
70	3.06		

## 1/48/4 11/2

197313		10.00×10 <sup>-4</sup> H.	Olycine • 2.00×10 N
		4.00×10 <sup>-2</sup> H,	Ig (XX) = 4.80x10 -6
RC1	430	1.00×10 <sup>-2</sup> m,	Hyfore) 2 = 3.34×10 <sup>-3</sup> H

### Temperature 40°C

Time (min.)	mi of hypo 64/926)	1003 x30 M	
00	9,28		
05	7.40		
10	6.30		
20	4.56		
<b>(30)</b>	3.72	9.00	7.90
40	3.20		
90	3.00		
60	2.32		
70	2,06		

	449	10.00×10-4 <sub>H</sub> ,	Clycine = 2.coxic-2
93		4.00x10 <sup>-2</sup> n,	% (111) = 4.80×10-6
RG1		1.00×10 <sup>-2</sup> M.	195 (DAG) = 3.34x40 -3

## Tempo reture 45°G

Time (nim.)	and the first production of the second decreases and the second decreases are second decreases and the second decreases are second decreases and the second decreases are second decreases and the second decreases are second decreases and the secon	PERSONAL PROPERTY.	( # )×10 <sup>7</sup>
00	9,28		等。"阿尔克·阿尔克·阿尔克·阿尔克·克尔克·克尔克·克尔克·克克·克克·克克·克克·克克·克克·克克·克克·克
05	7.28		
10	5.96		
20	3.06		
30	3.16	9.00	13.33
40	2.96		
90	2.00		
60	2.76		
70	2.64		

	63	20.00x20 4,	Almaino •	A CONTROL
nes		10.00×10 <sup>-2</sup> M.	rection .	4.80×10 <sup>-6</sup> H
**3		1.00m10 N.	Hy (SAC) 2 =	3.34×30 <sup>-3</sup> M

#### Tumperature 35°C

40000		· · · · · · · · · · · · · · · · · · ·	· 中国中国的中国中国的中国中国的中国中国的中国中国中国的中国中国的中国中国的中	
	21,000	ed of hypo	NDS 2430 M	( = 1 x 10 7
45-25-4-4	(ato.)	11/840)	galfallatur. Tan-180° isonotati ganataini dapipeni ja pish da njagasaka da njeka	
	00	8.40		
	05	7.92		
	10	7.60		
	20	6.62	9.00	1.65
	43	5.04		
	60	4.00		
		3.56		
	200	2,96		
	\$20	2.24		

	44	10.00:10 N.	Amitre = 2.00x10 -2M
W.1	***	10.00×10-2 <sub>N</sub> .	I (XXX) = 4.80×20 M
KG1		1.00×10 <sup>-2</sup> M	Hy \$740) 2 = 3.36x10 <sup>-3</sup> M

## Tomposatases 40°C

221:00	al of hypo		( ** ) ×10 **
(aln.)	6/940)		
00	9.40		
65	7.66		
10	7.30		
20	5.86	9.00	2.50
30	4.02		
•	4.36		
3)	8.70		
60	3.33		
	2.93		

## SAME 13.4

400	10.00×10 M,	Almaine		2.00x10 <sup>-2</sup> 15
49	10.00 0x10 -2 M.	<b>1.</b> (17.1)	100	4.00x10 -6
	1.00×10 <sup>-2</sup> ×.	RJ (DAS)	2	= 3.34s30 %

#### Temperature 45°C

(mi.es.)		30 44	( # )=	
00	9-40			
	7.30			
30	6.42			
	5.36		4.40	
30	4.79			
2.5	6.00			
30	3.72			
	3.32			
45	3.00			

### TABLE ALT

	10.00×10-4	Valine = 2.00x10 <sup>-2</sup> M
7.53	4.00m30 <sup>-2</sup> H,	Ig(III) = 4.80×10 <sup>-4</sup> N
	1.00×10 <sup>-3</sup> M,	19 (0/40) 2 = 3.34x10 3

#### Temperatura 35°C

	mt of hypo	NEED MADE	( ** 1×107
(al.a.)	tv/1020)	· · · · · · · · · · · · · · · · · · ·	
60	30.20		
05	9.90		
	9.06		
20	0.16		
40	6.39	9.00	1.16
60	5.00		
<b>C</b> D	4-26		
	3.54		
120	3.20		

= 10 00×10 A,	Velice = 2.00x10 4
= 4.00x30 H,	1, (XIX) = 4.86×10 %
- 1.00×10 <sup>-2</sup> H,	Hg (0.40) 2 = 3,36x10 -3 <sub>H</sub>

#### Turpomia to 40°C

5120	m2 of hype	STORE SERVING	(*************************************
(aln.)	(*/754)		
00	30.20		
05	9.18		
10	8.00		
20	6.56		
30	5.30	9.00	2.9%
40	4.50		
50	3.72		
	3,46		
	3.40		

		10.00×10	Valine = 2.00x10 7
	40	4,00x40-2	I ( ( ) ( ) = 4.80×10 -4/4
MC3		1.00×10 <sup>-2</sup> M	Hy (Disc) 2 = 3.34x20 <sup>-3</sup>

#### Temperature 45°C

fidne)	ml of hype (1/1020)		( # 1×10°	
00	10.20			the the second
05	7.53			
20	6-40			
35	5.36			
20	4.55	9.00	5.00	
25	6.04			
30	3,62			
35	3.30			
40	3.20			

The kinetic results of tables 11.1 - 11.3 and  $30^{\circ}$ C, tables 11.6 - 11.6 and at  $30^{\circ}$ C and tables 11.7 - 11.9 and at  $30^{\circ}$ C have been suggestively.

#### ZAMA: 11.10

		10.00×10 <sup>-6</sup> H,	Glycine = 2.00x10 <sup>-2</sup> H
		4.00×10 <sup>-2</sup> N,	1, (III) = 4.80×10 <sup>-4</sup> /4
KGI.	83	1.00×10-2n	197 (DAC) 2 = 3.34x20 -3H

Tangoman.	re (°c)	k <sub>1</sub> × 10 <sup>4</sup>
un erna-kir-gar-arvaterdasiyidi.	· · · · · · · · · · · · · · · · · · ·	
35		5.09
40		8.33
45		14.81

NBS = 10.00 x 10<sup>-6</sup> M.

NG1 = 10.00 x 10<sup>-2</sup> M.

NG3 = 1.00 x 10<sup>-2</sup> M.

Alamine = 2.00 x 10<sup>-2</sup> M.

Temperature (°C)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	k <sub>a</sub> × 10 <sup>4</sup>	
如果一种,我们也是一种,我们也是我们的人,我们就是我们的人,我们就是我们的人,我们就会没有一种的人,我们就会没有一种的人,我们就会没有一种的人,我们就会没有一种的人。 "我们就是我们的人,我们就是我们的人,我们就是我们的人,我们就是我们的人,我们就是我们的人,我们就是我们的人,我们就是我们的人,我们就是我们的人,我们就是我们就	<b>等一般,这种"这种"的种,这种"的种"的种类的一种,对于"一种"的种种种种,是一种种种种种种种种种种种种种种种种种种种种种种种种种种种种种种种种</b>	tilion aga
30	0.98	
35	1.61	
40	2.70	
45	4.89	

		10.00 x 10-4	M,
ACC)		6.00 × 10 -3	14,
KC)		1.00 × 10 <sup>-2</sup>	11,
Val imp	600	2.00 × 10 <sup>-2</sup>	
I g (III)		4.80::10	
ng tores		3.34 s 10 <sup>-3</sup>	

		, ( °G	)	k, × 10 <sup>4</sup>	
	an nik dikinika katika sinta sa sa sa sa	ela: ; jogen vilja osvitelit i 2500. ngov vi	naso dina iki mpaninisi ingahasi i	त्य प्रियम् वर्गासम्बद्धाः अनेनामानाः वर्गाः वर्गानाः वर्गानाः वर्गानाः । वर्गानाः । वर्गानाः । वर्गानाः । वर्गानाः	有一种基本的 · 概以 1994年 · 概以
	ANTINA CARRIES				
	30)			1.00	
	35			2.00	
	40			3.23	
	45			5.30	

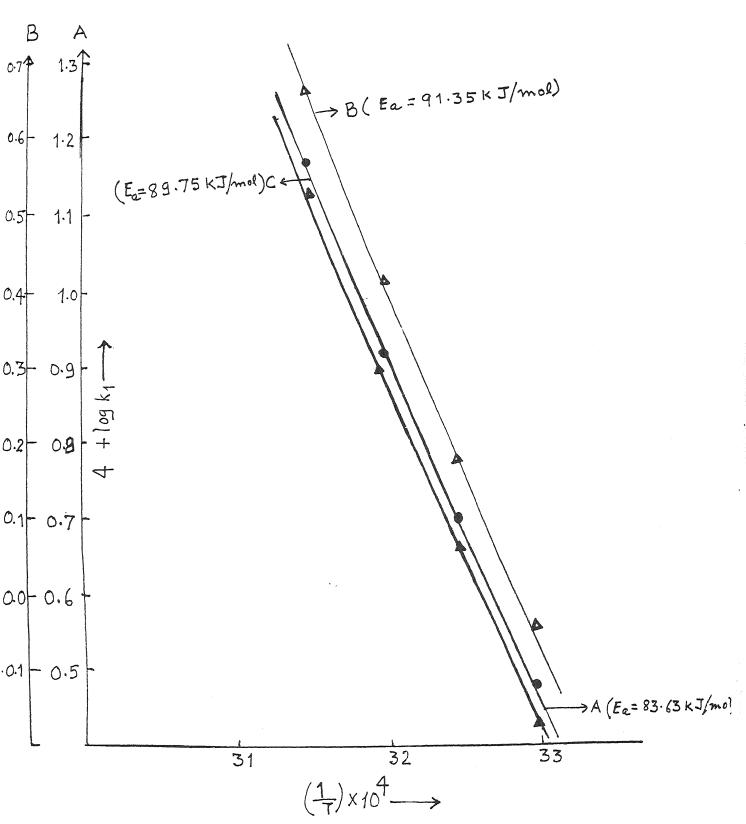


FIG. 11.1:  $A \rightarrow In$  UXIDATION OF GLYCINE  $B \rightarrow In$  OXIDATION OF ALANINE  $C \rightarrow In$  OXIDATION OF VALINE

that on increasing the tem-permune the value of first - order rate constant increases, how when log k, values were plotted against - . a attraignt line 'Fig. 11.1) with slope egual to - 80/2.3038 is obtained. Thus from the slope of the curve it is possible to calculate the value of Eq. 1.0. energy of of activation for ordering of entire to raid used here. The value of energy of extivation for I; (iii) catalysed oxidation of glycier, alonine and value by acidic solutions of H-baraceucciniside are 64.63 kJ/mole.

SHADER YEA

RESERVATION OF RESERVE AND DEFENDATION

This chapter deals with interpretation and discussion of experimentally obtained results and on the basis of such interpretations, an attempt would be made to propose the reaction scheme for Istill chloride catalysed oxidation of amino acids vis. glycine, alumine end valing by active solutions ti-benesticainiside in the presence of merconic acetate as broaids ions scavenger. The geaction mechanisms for any seaction may be proposed on the basis of kinetic observations by many ways but only that mechanism is supposed to be correct which is capable of giving rate equation is complete agreement with cheerwad kingtic facts. Descript the meastion behave for the reactions under investigation here is suggested, it is assential and worthwhile to discuss and modertain the reschive species of various messtants involved in the reactions, Hants in order to ascertain the reactive species of n-browsuccinicide, reducing asimp acids and ist ion (III) chieside is bydanchiesia acid media, a careful observations of Minetic features are required. The refers in the next sections kinetic results in Summeriumi form and discussion on the reactive species of aforesaid meachants are described and the meater finel mechanism has been purposted in section 12.5.

Pollowing are key kinetic observations made in the title reactions.

- (4) The sections show first order dependence on NSS at its low concentration range while first order shifts to sem order at higher concentration range.
- (41) All the reactions tollow first order kinetics with respect to each amino acids used here i.e. with respect to each of dyding, alumine and value.
- (111) First order dependence of the reactions on iridium
- (iv) Variation of hydrochloric acid shows decreasing effect of hydrogen ions on the rate of oxidation of amino acids.
- (v) Addition of succintaids in the reaction sixture of all mestions decreased the rate of oxidation of amino acids.
- (vi) Addition of mercuric apetate did not bring about any change in the rate of oxidation of amine acids.
- (vii) Addition of potassium chiories was found to have to significant effect on the rate of exidation of amino action.

- (viii) Veriscion of ionic strength of the ordium showed zero effect on the case of oxidation of mico acids.
- (II) Temperature variation thoused marged effect on the rate of MBS - Paino solds soder systems.
- (CIX) Corresponding aldohydes have been found to be mastice purducts.

# 2.2 • ASCREPAINING OF REACTIVE SPECIES OF REPROPERTY DUCCINES IN INDROCHASES ACID

H-bromosuccinimide (1935) has been already reported to emist in the following equilibrium.

In esidic media MBS 1.2 may exist as given below :

Thus from above equilibria it is clear that in scicit media oxidising species of NBS may be either NBS or NBS or

reaction shows retarding effect of H\$ on the rule, the refore possibility of made and H\_0 B\_0 is nuled out although negative effect of succiniaide (1500 is explained on assuming H\_0 B\_0 as eachiering species, when MBS as such is taken as mactive species them succiniaide effect should be some contrary to observed its degreesing effect. This suggests that MBS can not be exidesing species as it will fail to explain the kinetic behaviour of reactions with respect to succiniaide. Hence the only choice is MOS\_ which can be taken as reactive species.

## \*\*\* \* BEACTIVE DISCUSS OF AMINO ACIDS IN INCREDITIONS

Jedin acids have been reported to exist as displar lonic faces in water. It exists as sufficio.

In acidic media, amino acid might exist as BCH, (MA) COOM according to the following equilibrium

RCH, MIGCOO + N RCH, MM, COOK ... (3)

protonated entro acid may be reactive reducing substance.

But if RCS2 NH3 COOM i.e. protonated emiso acid is taken
as reactive species, it would require first - exder
dependence on H\* contrary to our observed decreasing
effect of H\* on rate of reaction. This rules out the
possibility of protonated species of emiso acid as
reactive species. Hence display tonic form i.e. neutral
emiso acid (i.e. RCS2NH3COOM) is reactive species. This
when essumed as reactive species gives rate low capable
of emphasining all observed kinetic data.

## 12 MINOROGRAM STATES OF TRANSPORT CONTRACTOR OF TRANSPORT CONTRACTOR CONTRACT

In acidic medium iridium (III) chloride\*

Further  $\mathbf{I}_{\mathbf{c}Cl_{\mathbf{6}}}$  is also in equilibrium with  $\mathbf{I}_{\mathbf{c}Cl_{\mathbf{5}}}$  according to the following equilibrium

Thus those are these possibilities of reactive species in hydrochloric acid for injulia (III) chloride. These ere i.cl. 1.12. and

Approximate the process of the process of the section of the section of the contrary to our imagnificant effect on the rate of mection. Hence the only choice left to emptsal upschool [4], we such her been essented to be real catalytic appeals.

ections that NOR, and soutral amino acid are exidising species and maduring species of N-becomes weetnimide and amino acids respectively in acidic media, Since there is no significant effect of variation of chiefact ions on the rate of the maction hence is as such has been taken as mackive species of the catalyst, for the sake of convenience, I,Cl, has been written as I,Cli) the more included.

the kinetic sesults into consideration, the following mechanistic steps are suggested, here 1885, BCH (BM.) COOM and NEW stand for N-brospersziniside, mains acid and specialistic sespectively.

+ 12 (XIX) + HH3+ CO2 + HH

... (111)

where R stands for -H, -GHz, -CH (CHz) in glycins, alonipe and value respectively.

The rate of the aforesaid reaction may be expressed in terms of rate of loss of concentration of succinimide i.e. -d MSS /dt.

Hence on the basis of above steps rate of the geaction may be written as

-3 NBS

On applying steady state approximation to the communication of X we got eqn (2) with the help of steps (ii) and (iii)

On substituting the value of X from eqn (1) to eqn (1) we have eqn (3)

Now the total concentration of  $I_{\mathbf{g}}CL_{\mathbf{3}}$  i.e.  $I_{\mathbf{g}}$  (III) may be written as eqn (4)

$$X_{H}(III) = X_{H}(III) + X$$
 (6)

Now by comparing equa (2) and (4) we have

On comparing equs (3) and (6) we have

Since  $k_0$  i.e. velocity constant for the elevest step is small hence  $k_0$  as  $(k_2 \ N^2 + k_2 \ NDB_g)$ 

Thus considering the above inequality orn (7) becomes eqn(8)

Commidering step (1) we have

or none . Et no mas / nen

\*\*\* (3)

On Substituting the value of HOD; from eqn (9) in eqn (9) we have eqn (10)

nsh

MEH

where k = kg kg kg

It is evident from the rate low (10) that

S) Order with respect to MDS at its low concentration is one when k, H MSH k, K, MSS and equation (10) becomes e.m. (11)

Again at higher concentration of NBS the I order tends to sero - order i.e. when  $k_2$   $k_3$  MRS  $k_{-2}$  (M<sup>2</sup>) MSH and eqn (30) becomes eqn (33)

The rate eqn \$10) clearly shows first order in both I (111) and emino acid i.e. AA. It also explains decreasing effect of H\* i.e. NGI and SSH.

no involved in the section except its tole as acavenger for

for bomide ions. It also explains meso effect of chloride ions i.e. KCl addition.

basis of mechanistic steps (1 - 111)) which involve interaction between a dation and a meutral noiscute in the slow and rate determining step. Such interaction requires semp effect of ionic strength of the medium which has been experimentally also observed. Hence rate for (10) also explains negligible effect of ionic strength of the medium of the medium on the case of oxidation of the mains aside.

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